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The Dark Side of German “Welcome Culture” Investigating the causes behind attacks on refugees in 2015

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Abstract: *In 2015, Germany experienced a record high influx of refugees – and received international appraisal for its “welcome culture”. At the same time, however, attacks on refugees rose to an alarming level. This paper describes the distribution of these attacks and probes their causes using detailed socioeconomic and political data while modelling a hierarchical data structure. Controlling for further relevant factors taken from the extant literature, the analysis first tests whether the strength of extreme right political parties plays a role and, second, it models a contagion effect taking into account spatial as well as temporal proximity. The findings suggest that the strength of right-wing parties in a district considerably boosts the probability of attacks on refugees in that area. They also corroborate the idea of behavioural contagion. The set of social structural variables employed as controls yielded only limited explanatory power.*

Keywords: Refugees, political violence, immigration, Germany, extreme right, contagion

Introduction

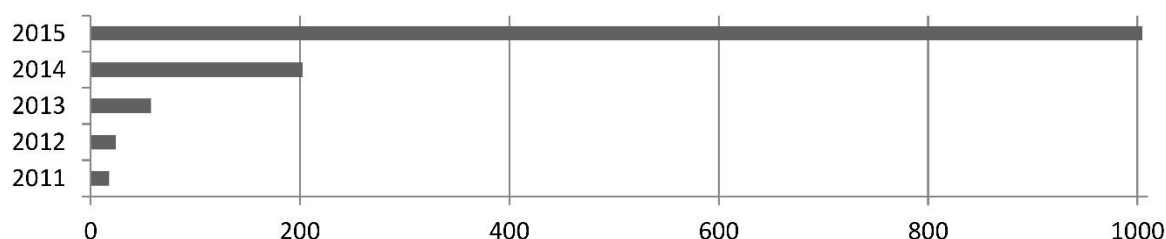
Germans’ openness toward foreigners was put to a test in the face of large inflows of refugees in 2015. Moreover, this development spurred palpable changes in the political landscape. The AfD (Alternative for Germany), which started out as a market-liberal anti-Euro party, turned into a nationalist and populist right-wing party and gained ground in opinion polls. Its development was paralleled by the rise of the so-called PEGIDA¹ movement, which organized regular protests in favour of a much more restrictive immigration and refugee policy. In late 2015, the refugee issue became especially salient in German politics and even caused a chasm amongst the Christian democrats. Chancellor and head of the CDU (Christian

¹ PEGIDA stands for *Patriotische Europäer gegen die Islamisierung des Abendlandes* (Patriotic Europeans Against the Islamisation of the Occident).

Democratic Union) Angela Merkel promoted a relatively open policy regarding incoming refugees. Her stance, epitomized in her quote “Wir schaffen das” [“We can do it”], has been the object of heated debate in Germany and beyond (see e.g. Cohen 2015). Particularly the Bavarian Prime Minister Horst Seehofer, who is also head of the CDU’s sister party, the CSU (Christian Social Union), harshly criticized Merkel and demanded a clear upper limit for the number of incoming refugees – a claim that became more and more popular even within Merkel’s own party.

Meanwhile, the social fabric unravelled as the number of attacks on refugees rose incessantly. For example, the number of criminal offences against accommodation for refugees had steadily increased since 2011 before surging to a record high in 2015 (see figure 1). Since these official data for 2015 are only available in an aggregated form, which makes them inapplicable for a detailed analysis of their causes, we will resort to another, unofficial source of data for our models – the Amadeu Antonio Foundation (see data section for details).

Figure 1: Criminal offences against accommodations for refugees



Annotations: Official data from the *Bundeskriminalamt* including all types of criminal offences against accommodations for refugees (property damage, propaganda and agitation, arson attacks, sedition).

Violence against refugees can be seen as a particularly strong expression of xenophobia. The research on xenophobia and related concepts has so far mainly dealt with attitudes toward foreigners and immigrants. Studies in political science and sociology have examined the determinants for these attitudes on the micro-level (Daniels and Von Der Ruhr 2003; Fertig and Schmidt 2011; Espenshade and Calhoun 1993; Hainmueller and Hiscox 2007) as well as the role of contextual variables (Malchow-Møller et al. 2009; Mayda 2006; O’Rourke and Sinnott 2006). A number of contributions, largely on Germany, have dealt with the behavioural dimension of negative attitudes toward immigrants (Falk, Kuhn, and Zweimüller 2011; Koopmans 1996; Krueger and Pischke 1997; Merkl 1995; Esser and Brosius 1996;

Koopmans and Olzak 2004; Braun and Koopmans 2010; Braun 2011). Findings from these studies indicate that economic deprivation plays only a negligible role, that indicators of social disorganisation are positively related to attacks, and that more violence against foreigners occurred in East Germany – and there particularly in the rural areas.

Strikingly, the evidence for the influence of anti-immigrant or extreme right-parties is mixed. There is evidence from analyses that points to a larger vote share of these parties actually attenuating ethnic violence (Braun and Koopmans 2010; Koopmans 1996) but also to the absence of an association between anti-foreigner party strength and ethnic violence (Braun 2011). The political variable of extreme right party strength thus clearly merits further investigation.

Another striking finding in the extant literature is the major importance of diffusion dynamics at work. Koopmans (1996) points out that political elites have contributed to a mobilisation of far-right positions in early 1990s Germany through problematizing the immigration issue. Moreover, diffusion of ethnic violence seems to be transmitted by the mass media, but it can also stem merely from the cumulation and closeness of recent attacks (Esser and Brosius 1996; Koopmans and Olzak 2004; Braun and Koopmans 2010; Braun 2011; Ohlemacher 1994). The notion of a dynamic of behavioural contagion is thus highly relevant for explaining attacks on refugees.

This is especially important because, overall, it seems that waves of violence against foreigners are hard to pin down to certain determinants. Conceptually and psychologically, there is a considerable gap between attitudes on the one hand and action in terms of violence against foreigners on the other hand; and there may largely be idiosyncratic causes that lead people to commit such acts, making it hard to explain or predict such behaviour. In fact, media reports on violence against refugees in 2015 (see e.g. Kampf and Baars 2015; Geisler 2015) have pointed to the difficulty of identifying specific causes of such violent actions. Many of the perpetrators are apparently first time offenders, who have not committed similar acts before. Individual dispositions may thus not play a predominant role for explaining those attacks. With that said, it is crucial to look at the context in which such actions occur, as certain conditions may contribute to a climate that lowers the threshold for committing those kinds of acts.

Our analysis is located on the contextual level and uses aggregated data while still trying to remain as close as possible to the micro level. The dataset employed in the analysis contains

cases for every day of 2015 and each of the 402 German administrative districts. It allows us, in the descriptive part of the paper, to give a holistic picture of attacks on refugees in Germany. In the main analytical part, we test several factors that potentially determine the occurrence of attacks against refugees. We focus on two aspects that are of particular relevance in light of existing research: first, we test whether district level election results for far-right parties at the last general election in September 2013 and alternatively the European elections in May 2014 correlate with the probability of attacks. The evidence for this political factor is mixed so far and needs further testing. Second, our study includes a thorough test of a behavioural contagion effect, a mechanism that has received increased attention in recent years with regard to violence against foreigners: are violent political acts targeted at refugees more likely to occur when there has recently been a similar act in the vicinity and does it matter how close it was?

Theoretical assumptions

The two hypotheses: extreme right parties and contagion of political violence

Previous research has tested a number of possible determinants of attitudes toward as well as violent acts against immigrants (e.g. Ohlemacher 1994; Koopmans 1996; Krueger and Pischke 1997; Fertig and Schmidt 2011; Skrobanek 2004; Braun and Koopmans 2010). Most of that research stems from sociology and has concerned itself mainly with socio-cultural and material-economic determinants. Political context, in contrast, has played a comparatively marginal role (but see Koopmans 1996; Braun 2011; Braun and Koopmans 2010).² Yet, it seems evident that on the individual level, the political stance with regard to the socio-cultural dimension of political conflict strongly correlates with attitudes toward immigration and refugees (Kriesi et al. 2006; Duriez, Van Hiel, and Kossowska 2005). Extreme attitudes in this regard (such as racism) can be seen as a precondition for more or less violent actions directed against immigrants and even refugees. Extreme right parties, which represent these attitudes and sentiments, could be related to the occurrence of such actions as well.

There are, however, diverging expectations about the role they play in inciting violent actions: on the one hand, Koopmans (1996) points to the potential of right-wing political organisations to channel and defuse dispositions for violence and finds that, accordingly, more dominant

² Issue salience can be seen as another contextual factor. In this study, high salience of the refugee issue is simply taken as a given as it forms the background of the present analysis.

extreme right parties in a country lead to less violence of that kind. On the other hand, stronger extreme right parties could be expected to increase violence against foreigners given their mobilisation potential and their organisational basis. Supporters of radical right-wing parties are known to be more prone than the average citizen to commit crimes, particularly against foreigners (Falk, Kuhn, and Zweimüller 2011; Merkl 1995). Moreover, presuming that there are organisational links between such parties and other groups and organisations in which there is a greater readiness for violence against foreigners (for Germany see e.g. Backes and Mudde 2000), greater extreme right party strength should correlate with the potential to mobilise people to commit violent acts against foreigners. In addition, while parties of the extreme right are unlikely to directly and openly call for violence against foreigners, they indirectly legitimise such behaviour through their positions on foreigners and migration. Propaganda by extreme right parties is likely to present foreigners and even refugees as an enemy, to evoke feelings of hatred and more or less implicitly establish them as legitimate targets of violent action (see also Krueger and Pischke 1997). Moreover, if those parties manage to shape public opinion they may contribute to an overall political and social climate that is more conducive to violence against foreigners (Koopmans 1996; Merkl 1995; Ohlemacher 1994).

We believe that in recent German history, the idea of a channelling effect does not hold true for extremist right-wing parties such as the NPD (National Democratic Party) or DVU (German People's Union). Nationalist or even xenophobic sentiments are more likely to be tamed through mainstream parties in the conservative spectrum, such as the CDU and the CSU. Those who support the extreme ideological position of parties like the NPD and DVU are ready to overturn the political system as such, should hardly be appeased by being able to express their attitudes and sentiments through supporting such parties.

Because of this we presume that extreme right parties systematically contribute to violent criminal behaviour against refugees even where they do not openly incite such behaviour. Looking at some of the statements made throughout 2015 by the NPD and the AfD, which has turned from a Eurosceptic party to a more nationalist party that integrates extreme right sentiments, their potential for legitimising violence against refugees seems palpable. Not only have politicians of the NPD repeatedly made xenophobic and racist comments directed at refugees, AfD officials have also depicted the refugee influx as a threat, especially to the German people, whose cohesion and even purity they deemed endangered. The regional chairman of the AfD in the state of Brandenburg, Alexander Gauland, for instance, warned

that Germany would be dissolved in a stream of foreigners (referring to refugees in that context) (Badische Zeitung 2015). Marcus Pretzell, the regional chair of the AfD in North Rhine-Westphalia, championed the legitimacy of border control officers' use of fire arms to prevent refugees from entering the German border (Zeit Online 2015). Not much later, the head of AfD parliamentary group in the state parliament of Thuringia, Björn Höcke, used openly racist arguments when referring to alleged biological differences in reproduction strategies of Africans and Europeans (Hurtz 2015). These kinds of statements help to establish an environment in which refugees are only seen as threats or enemies to national citizens. This situation can induce some people to see their way of life menaced and to feel the need to stand up against this perceived threat. To sum up, for the reasons presented above, we expect that the strength of extreme right parties at the local level increases the probability of violence against refugees.

Hypothesis 1: The stronger extreme right parties are in a given context, the more likely are violent acts against refugees.

The second kind of explanation we are going to test is a contagion effect of violent behaviour. This notion of a contagion dynamic is very much in line with our focus on contextual variables – significant explanatory power might stem from the simple relationship that people who live in an environment in which political violence against refugees is more common may have a greater disposition to commit such acts as well. The idea of a contagion effect of (political) violence has so far mainly been examined in international relations, conflict studies and a certain branch of sociology. The first strand includes research that shows how political violence in one place increases (or reduces) the possibility of such violence in another place and that the media may play a role in driving such an effect (Engene 2004, 18; Aaltola 2009, 27). A wave of studies from the 1970s and 1980s introduced the idea of a contagion effect regarding political violence and provided empirical evidence for it (Hill and Rothchild 1986; Li and Thompson 1975; Midlarsky, Crenshaw, and Yoshida 1980; Most and Starr 1980). A number of studies with a sociological focus have tried to apply mathematical models of epidemics on outbreaks of collective violence (Pitcher, Hamblin, and Miller 1978; Myers 2000; Patten and Arboleda-Flórez 2004; Midlarsky 1978). This research has shown that collective violence largely conforms to patterns of behavioural contagion in line with the notion of epidemic diffusion.

As with collective violence, the idea of behavioural contagion is also applicable to violence against refugees as it is conceivable that the occurrence of such violence and people learning

about it may lower inhibitions of violence against refugees and stimulate imitation of previous attacks (Braun 2011; Braun and Koopmans 2010). This leads to the following hypothesis.

Hypothesis 2: The closer a recent attack on refugees in terms of spatial distance, the more likely are violent acts against refugees.

Theoretical assumptions behind the controls

In addition to the two hypotheses presented, our models will take into account a number of determinants as control variables. These variables can be grouped under a socio-cultural and a material-economic dimension.

The socio-cultural dimension is arguably the most important one as the issue of immigration is rooted in questions of group relations and social identity. Social psychological research has shown that people have a strong tendency to define themselves through group memberships and identities (Hogg 1988; Huddy 2001; Tajfel 1992). These identities are typically emotionally charged attachments and a source of self-esteem for individuals. Consequently, they are inclined to make favourable comparisons between in- and out-group resulting in positive stereotypical perceptions of the in-group and negatively biased perceptions of out-groups. The degree to which this social psychological mechanism plays out depends on the salience of a social identity as well as the commitment to a group (Ellemers, Spears, and Doosje 2002). If an identity is important to a social individual and there is a relevant out-group that person will be strongly motivated to emphasise that identity and thus keep up this distinction. As the most obvious determinant of sentiments toward immigrants or foreigners as an out-group it has to be controlled in our models.

Social disintegration contributes to violent behaviour against foreigners. It has been shown that group disintegration and an anomic attitude lead to a stronger negative stereotyping of out-group members (Hamblin 1962; Legge and Heitmeyer 2012). Anomie as an individual quality is generally seen as a state in which a person experiences a gap between the socially recognized goals and the means and possibilities individuals have at their disposal (Merton 1938). Under these conditions, a person may try to compensate for a lack of means for gaining recognition by evoking a feeling of superiority over out-groups. Therefore, the higher the degree of anomie, the higher the number of violent acts against refugees.

Another important factor for explaining anti-immigration sentiments is based on the contact thesis (Allport 1954), which states that increased contact among people of different

backgrounds and origin reduces negative stereotypes. This idea has been corroborated in several studies (e.g. Ellison and Powers 1994; Wagner et al. 2003; Hayes and Dowds 2006). At the same time, findings based on anti-foreigner attitudes and the share of foreigners in geographic units are not consistent (Stein, Post, and Rinden 2000). Nevertheless, given the supporting evidence for the contact hypothesis on the behavioural level and a recurring finding on the macro-level that xenophobia is more pronounced where the share of immigrants is lower (Hjerm 2009), it is important to take the share of people with a migration background into account. Where this share is higher on the German local level, we expect a lower probability of attacks on refugees to occur.

It is conceivable that there are also less palpable socio-cultural influences that depend on the context people live in. Specifically, in their study about violence against foreigners in Germany after the unification – a time of intensified immigration, particularly from the western Balkans in the course of the Yugoslav Wars with a peak of more than 420.000 asylum applications in Germany in 1992 – Krueger and Pischke (1997) concluded that the difference between West and East Germany had a major explanatory value and that the pattern of violence was also different between the two larger regions. In East Germany, more violence occurred in rural areas and was especially prevalent amongst younger people. We therefore argue that possible (sociocultural) differences between East and West Germany may even be relevant today because of historical differences and differences in socialisation. Yet, in our view this dummy can hardly be seen as a master variable that serves as a proper explanation of violence against foreigners. Instead, the objective should be to trace differences between the two parts of Germany back to substantial variables.

With regard to the material-economic dimension, some contributions contend that subjective material deprivation leads to more negative attitudes toward immigrants (Esses, Jackson, and Armstrong 1998; Hernes and Knudsen 1992; Mayda 2006). The causal mechanism is in part similar to that of anomie. People who experience material deprivation perceive a limited access to resources that afford them social recognition. Relevant out-groups may be perceived as a threat to limited resources and they can hence become the targets of derogation and discrimination in order to lower this group's social worth (Esses, Jackson, and Armstrong 1998). Acting out against members of the out-groups may also serve to compensate for frustration and a lack of social recognition and to achieve a feeling of dominance and superiority (Skrobanek 2004). In sum, material deprivation would lead to a higher probability of violent acts against refugees.

Competition for resources has been found to influence attitudes toward immigrants and voter behaviour (Esses, Jackson, and Armstrong 1998). However, some findings show that this is not the case for more educated and skilled people, even with regard to immigrants with a comparable skill level.³ Rather, educated people on average show a more positive view on immigration and appreciate cultural diversity to a greater degree (Hainmueller and Hiscox 2007; Scheve and Slaughter 2001; Fertig and Schmidt 2011). Education seems to form a sort of buffer against xenophobia as it allows access to resources that form the basis for social recognition besides those of a material kind. The effect of education on the individual level could also translate to the local level and have an impact on the number of attacks on refugees.

Data, measurement, and method⁴

The analysis looks at the determinants of whether an attack on refugees occurred on a given day throughout the year 2015 in a territorial unit. The data set therefore contains a case for every day of 2015 times the 402 administrative districts (*Kreise*). This leads to 146,730 cases in the analysis overall. Data for cases of violent political action were collected from the Amadeu Antonio Foundation, which registered these acts based on an extensive survey of news reports from all over the country. While we cannot be sure that the data are complete, the foundation's aim to document all of these events and its decentralised method of collecting allows for reasonable confidence that the data have a high reliability.⁵ The foundation documented four types of hostile acts against refugees: 1) personal injuries, 2) arson attacks on refugee accommodations, 3) other attacks on these accommodations, and finally 4) hostile demonstrations against refugees, which stand out somewhat as they do not refer to actual attacks on refugees. In the descriptive part of this paper, we will map all categories. For the main analysis we will group the first three types (leaving aside demonstrations) and code "1" if such an attack happened on a certain day in a given district, otherwise the case is coded "0".

³ At least, this is the case in countries in which the skill level of immigrants is lower than the average skill level of natives (O'Rourke and Sinnott 2006; Mayda 2006).

⁴ We would like to thank Nicoletta Backhaus, Magdalena Breyer, Lars Konheiser, and Lennart Vogt, who helped to create the dataset. For replication, all data and Stata do-files can be found at www.sebastianjaeckle.de/publications.

⁵ As already mentioned at the outset of the paper, official data is only available at an aggregated level and thus not useful for our purpose.

For the independent variables, additional data that mainly stems from the district level was collected. The variable for the strength of extreme right parties is based on the second votes these parties obtained at the Federal Election of 2013. We aggregated the municipality level data to the district level. As a cross-check, we use the vote shares of a second order election (Reif and Schmitt 1980) – the European Election of 2014. Using this data source allows us to take into account the rise of the AfD and its shift further to the right. We determined the NPD, REP (The Republicans), Die Rechte (The Right), proDeutschland (proGermany) and proNRW (proNorth-Rhine-Westphalia) as clear extreme right parties. We also added the AfD as it has, after the Länder elections of late 2014, turned into a party that holds political orientations ranging from the nationalist conservative to the far-right area of the spectrum, has become a relevant political force and, overall, takes a clear anti-immigrant stance (Korte, Leggewie, and Lewandowsky 2015). Table 1 shows their vote shares at the two elections.

Table 1: Results of extreme right and populist right-wing parties at the 2013 Federal Election and the 2014 elections to the European Parliament in %

| | Federal Election 2013 | EP Election 2014 |
|----------------|-----------------------|------------------|
| AfD | 4.704 | 7.052 |
| Die Rechte | 0.005 | - |
| NPD | 1.283 | 1.026 |
| proDeutschland | 0.169 | - |
| proNRW | - | 0.179 |
| REP | 0.209 | 0.374 |

Source: <https://www.bundeswahlleiter.de/>; (-) did not compete.

In order to measure a possible contagion effect based on temporal closeness and spatial proximity we draw upon the geographic coordinates of districts and attacks. Specifically, for a given case we calculated the geodetic distance to the closest attack or hostile demonstration against foreigners of the previous week (here we use all four types of violent behaviour the Amadeu Antonio foundation registers because hostile demonstrations may also set the stage for and motivate violent acts). The resulting variable corresponds to the spatial diffusion variable used by Braun and Koopmans (2010). The constructed variable is based on the distance between the district centre (polygon centroid) and the geodetic coordinate of the nearest incident.⁶ Since we assume that the relationship between the distance and the probability of an attack is not linear but that the contagion effect fades disproportionately with

⁶ Distances were calculated using the WGS 1984 reference ellipsoid. In order to be able to determine the distances for the first week of 2015 we have included incidents that took place in the last week of 2014, too.

rising distance, we use the logarithm of the distance in our models.⁷ This variable should capture most directly the concept of behavioural contagion, specifically the idea that, to put it simply, the probability of an attack in a district on a given day increases through the recent occurrence of an attack in the vicinity (and the closer the more likely). This effect may, however, be confounded by the sheer extent of country-wide attacks in the previous week (overall temporal concentration) as well as an overall larger probability of an attack in a certain district, i.e. by the district's path dependency.⁸ We have therefore included two further variables that relate to a diffusion dynamic used by Braun and Koopmans (2010) and by Braun (2011): (a) the number of all attacks in the country during the previous week and (b) the cumulated number of attacks in a district until a given day.

Because of a lack of data, a variable that captures the intensity of national identity and out-group derogation could not be constructed for the district level. We thus used two variables on the state level. First, we constructed a variable that captures the extent of an exclusive national identity based on Eurobarometer data. Specifically, we subtracted the perceived national identity of citizens from their subjective European identity. In order to obtain more reliable results we calculated this measure for the German states based on the Eurobarometer surveys from November 2013 and from November 2014 and then averaged the values from both years. Second, we used four items from the German ALLBUS dataset (year 2014) for constructing a xenophobia scale. Like the Eurobarometer data, the ALLBUS allows to calculate mean values on the state level.

Possible socio-cultural differences between Western and Eastern Germany are measured by a simple dummy variable (1 = East German states). The material-economic variable "deprivation" is measured by means of the unemployment rate as well as by education level (both on the district level) in terms of shares of the graduates who have reached university entrance level and of those who have not completed lower secondary education (*Hauptschulabschluss*). For further robustness checks we have also tested three variables that have been subsumed under social disorganisation in earlier research (Braun and Koopmans 2010, 7; see also Braun 2011) but were specifically used there to measure "unfavorable socioeconomic conditions" and social problems in general. These are the population loss measured as net migration in a district as well as the life expectancy and mortality rate in a district.

⁷ For the sake of robustness we also test a linear version of the contagion variable.

⁸ We would like to thank an anonymous reviewer for pointing this out.

Anomie or disintegration is difficult to operationalise, not the least because it is contested whether it amounts to a concept located on the individual level or refers to relations among persons. As our study is situated on an aggregated level we opted for a proxy that measures structural disintegration in a territorial unit, namely abstention at the 2013 Federal Election. Because political disaffection and apathy are major drivers of abstention (Austin and Pinkleton 1995; Bélanger and Nadeau 2005), we employed voter turnout at the preceding national election as a proxy for anomie.

The indicator used to measure the probability of nationals having contact with foreigners is the share of people with a migration background on the district level. Finally, in order to improve the specification of our models and to obtain a stricter test of the other independent variables, the analysis also draws on two factors that should naturally raise the probability of an attack on refugees occurring. First, the number of inhabitants on the district level can be expected to drive the occurrence of these events, and they should become less likely where there are less people – and less refugees – in the first place. As an alternative indicator, the population density is used. Second, the share of male inhabitants on the district level has been included in the analysis as a control because people who commit violence are usually male. Table 2 gives an overview of all variables and their operationalisation.

Before testing the influence of the independent variables on the occurrence of attacks on refugees on a given day in a given district, we provide a descriptive geographical account of these attacks. For this representation, we used the exact coordinates of the municipality or town where the attack happened. In order to adequately model the structure of our dataset, we then use a hierarchical logistic regression. In these models, we aggregate the information at the municipality level to the level of administrative districts – the level for which most of the data regarding our independent variables are available. This leaves us with three levels that nest days into districts that are in turn nested in the German states. Empirical evidence that justifies the decision to apply a multilevel model beyond theoretical reasons in face of the data structure is presented further below.

Table 2: Overview of the variables and data

| Concept | Indicator | Source | Level |
|--|---|---|------------------|
| <i>Violent action against refugees</i> | Attacks on refugees: 1. personal injury, 2. arson attack targeting refugee shelters, 3. other attacks on refugee shelters (4. hostile demonstrations) | Amadeu Antonio Foundation | District (daily) |
| <i>Strength of extreme and populist right-wing parties</i> | Vote share for extreme right and populist right-wing parties at the 2013 Bundestag and the 2014 EP election (see table 1 for a list of the respective parties) | Bundeswahlleiter | District |
| <i>Behavioural contagion</i> | Geodetic distance of the closest attack during the previous week | Statistisches Bundesamt | District (daily) |
| <i>District path dependency</i> | Cumulative number of attacks | Amadeu Antonio Foundation | District (daily) |
| <i>Overall temporal concentration</i> | Number of all attacks in Germany during previous week | Amadeu Antonio Foundation | Daily |
| <i>Outgroup derogation</i> | National versus European identity, xenophobia | Eurobarometer, ALLBUS | State |
| <i>East Germany</i> | Dummy Variable for East German states (including Berlin) | | State |
| <i>Deprivation</i> | Unemployment rate, share of students reaching university entrance level and share of school leavers without lower secondary education graduation, net migration (2010-2014), life expectancy, mortality | Bundesagentur für Arbeit, Statistisches Bundesamt | District |
| <i>Disintegration</i> | Share of vote abstention (2013 Bundestag election) | Bundeswahlleiter | District |
| <i>Probability of contact with foreigners</i> | Share of people with migration background | Statistisches Bundesamt | District |
| <i>Controls for number of potential perpetrators</i> | Number of inhabitants/population density, share of male inhabitants | Statistisches Bundesamt | District |
| <i>Summertime</i> | Calendar summer 2015 (= 21. June – 22. September) | | Daily |
| <i>Weekday</i> | Dummies for all weekdays | | Daily |

Compared to the overall 146,730 cases the number of attacks is obviously very small. However, the number of positive (=1) cases – at least one attack occurring on a given day in a given district – is 603. Following Allison (2012), this relatively small number in relation to the number of cases should not constitute a problem for a logit model. According to him, the

number of events must be seen in relation to the number of predictors – there should be at least 10 events per predictor. With a maximum of 19 predictors in our models, it is therefore not necessary to correct for rare events.⁹ We use Stata’s melogit routine with adaptive Gaussian quadrature and seven integration points for each level, which yields more accurate results than marginal and penalised quasi-likelihood approximation algorithms – particularly for the random effects parameters. We present the model with the best fit in terms of the Akaike Information Criterion and log likelihood chi square test. For the sake of robustness we estimate further models using differing operationalisations of the independent and control variables, more integration points and gllamm instead of melogit. Before turning to the regression analysis we will first study the dependent variable.

Empirical evidence

Visualisation of the geographic dispersion of attacks on refugees

The maps in figure 2 depict all instances of attacks against refugee accommodations and foreigners as well as of hostile demonstrations that the Amadeu Antonio foundation registered in 2015. Looking first at examining hostile demonstrations, the overall picture is very clear: most of the anti-immigrant demonstrations took place in Eastern Germany and particularly in Saxony and Thuringia although there is also an observable clustering in North-Rhine-Westphalia (especially Cologne).

This distribution largely corresponds with the figure for personal injuries resulting from attacks on refugees, which again seems to be a primarily East-German phenomenon. It is important to note that the maps depict absolute numbers that are not standardised to population numbers. Knowing that Eastern Germany’s population is less than a quarter of the population of Western Germany (16 million/65 million) the differences become even more pronounced. Turning to the other two categories that indicate attacks against refugee shelters and immigrant accommodations (either by arson or by other means), we find a more dispersed pattern which strongly suggests that anti-refugee violence is not just an East-German phenomenon, but something that most parts of Germany have witnessed during 2015 – at least to some extent. Nevertheless, Eastern Germany, in particular Saxony, stands out.

⁹ In fact, all available corrections for rare events such as the Firth method or ReLogit (Tomz, King, and Zeng 2003) only apply for standard logistic regressions, but not for multilevel data.

Combining the entire data on all three types of attacks on refugees (without demonstrations) as well as data on the vote shares of extreme right and populist right-wing parties shows a striking pattern (see figure 3): particularly in those districts where these parties are strong, the number of attacks on refugees is highest. The gradient in figure 3 and the charted occurrence of attacks therefore indicate a clear difference between the Eastern and Western part of Germany *in both respects*.¹⁰ The next section will test in more detail which determinants lie behind violence against refugees and whether the observed regional differences can be attributed to these determinants.

¹⁰ The discernible concentration of votes for extreme right and right-wing populist parties can be attributed to a large part to historical legacy. Experience with democratic practices is shorter than in Western Germany and democratic values have not taken root to the same degree while authoritarian attitudes are still more prevalent. Moreover, there is a social grudge among a considerable share of Eastern Germans who see themselves as disadvantaged citizens (Best 2016; Zick and Küpper 2009, 296; Schroeder 2015, 392). It is not hard to see that a latent frustration and the difference in mentality may well contribute to a stronger anti-establishment stance and a greater success of right-wing parties while also making the occurrence of ethnic violence more likely. Differences in the political culture can thus be seen as a fundamental variable that partly lies behind the strength of these parties as well as the propensity to commit violence against immigrants at the same time. While it might be interesting to control for these difference in the analysis, it is very difficult to measure political culture and especially to obtain detailed information on the levels we are interested in.

Figure 2: Attacks on refugee shelters (arson and other attacks), personal injuries and hostile anti-immigration demonstrations in 2015

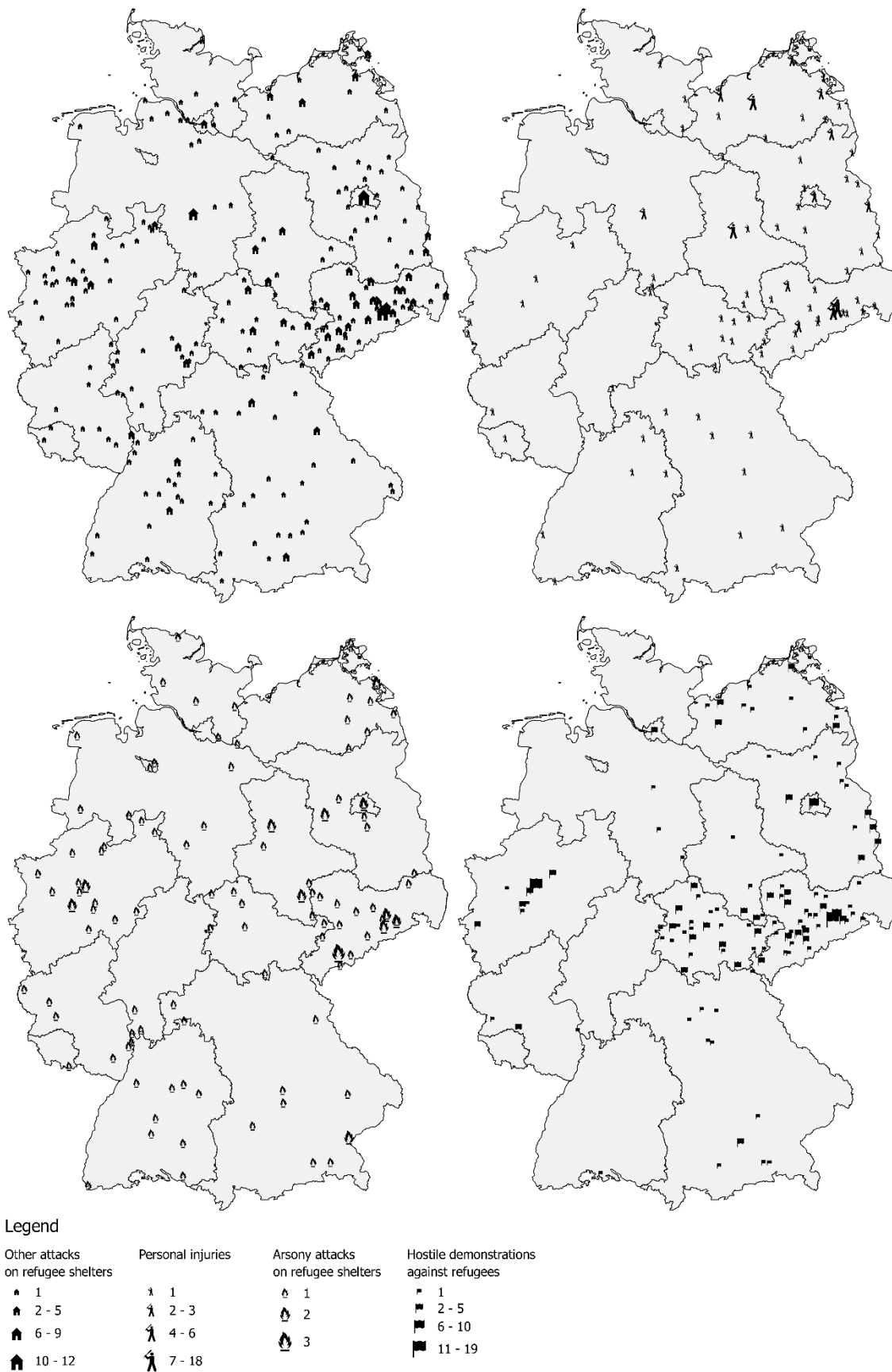
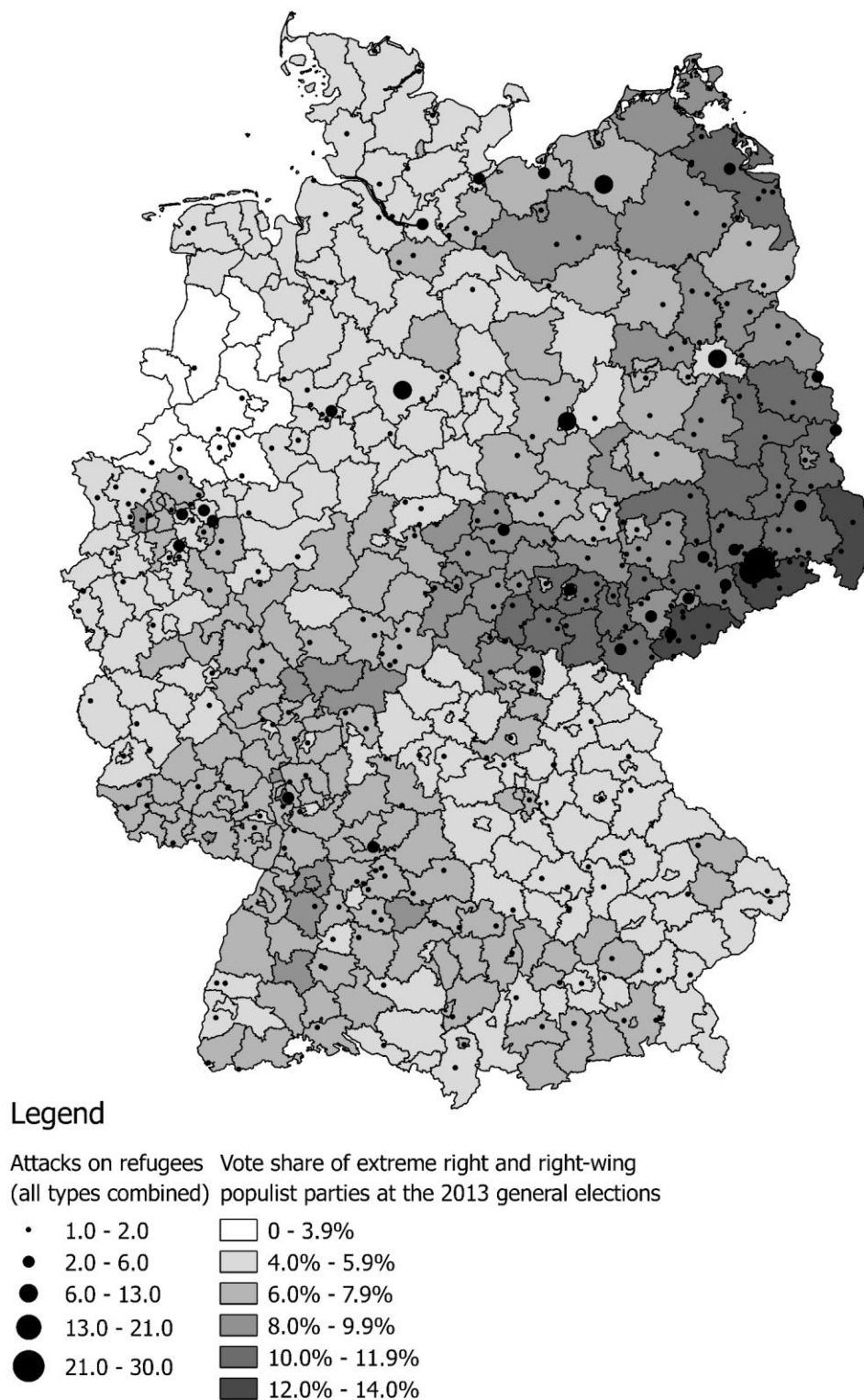


Figure 3: Attacks on refugees and vote share of extreme right and populist right-wing parties at the 2013 Federal Election



Regression model

The descriptive account already suggests that there are systematic differences at the state level and specifically between Western and Eastern Germany (including Berlin). When probing the appropriateness of a hierarchical model for the given data matrix consisting of three levels (states, districts and (district-)days), the null model corroborates this notion.¹¹ The variance component for the state and district level are both clearly different from zero (both significant on the 99%-level). While the intra-class coefficient for the highest level (state) is .25, it is .10 for the districts. These are very compelling reasons for employing a hierarchical instead of a simple logistic regression model.

As can be glanced from model 1 in Table 3, the evidence supports our suspicion that there is a marked difference between Eastern and Western German states when adding the corresponding dummy variable to the regression model. This variable alone explains 73 per cent of the variance on the state level. Apparently, the two regions are quite different, as the probability of attacks on refugees on a given day is about six times higher in the East (1.2%) than in the West (.2%). However, it seems that this is not a difference between the different parts of Germany per se. Rather, the observed difference in violence against refugees can itself largely be traced back to other variables and features with regard to which Eastern and Western Germany differ. When adding the other independent variables and controls, the dummy for Eastern versus Western Germany loses most of its effect size and becomes insignificant.¹² It is therefore dropped in the remaining models.

Model 2 contains the main contagion variable that is based on the geodetic distance to the closest attack during the previous seven days, the variable for the strength of extreme right parties and controls. Model 3 additionally includes the distances to the second- and third-closest attacks within the previous week, and model 4 includes two further variables for an extended test of the contagion dynamic (overall temporal concentration of attacks in Germany during the previous week and cumulative number of attacks in a given district). First, and importantly, the coefficients of the variables in models 2 to 4 remain highly stable. Second, adding the two variables for the distances to the second- and the third-closest attacks does not increase the explanatory power. It is therefore only the distance to the closest attack that seems to matter for the probability of an attack to occur in a district on a given day, which corroborates our understanding of a behavioural contagion that rests on relatively proximate

¹¹ See Annex O1.

¹² See Annex O2.

events. Third, even when controlling for the overall temporal concentration within Germany and the path dependency within the district, the first contagion variable shows an only slightly lower and still highly significant effect.

The effects from this fourth model, which shows the best fit, are presented as odds ratios in Figure 4 for easier interpretation (the constant is hidden for a better visualisation). The model explains 92 per cent of the state level and 58 per cent of the district level variance. As the Figure shows, the variables from our two hypotheses bear out as highly significant determinants ($p < 0.001$) that are important for explaining the occurrence of attacks on refugees. First, the strength of extreme right parties has a marked positive effect on the probability of attacks. This is true for the electoral results from the National Election of 2013 as well as those from the European Parliament Election of 2014.¹³ We can furthermore exclude that this effects is driven primarily by the AfD because when omitting the vote shares for the AfD, taking only those for the other right-wing parties of Table 1, the effect also shows and is even slightly stronger.¹⁴

Second, the variable measuring the distance to the closest attack within the previous week clearly reduces the probability of an attack on refugees. At the same time, (a) the temporal concentration variable and (b) the district's path-dependency variable are also both highly significant in model 4 and show effects in the expected direction (both increase the probability of an attack). These results mean that even when taking into account the total number of attacks in the previous week as well as the history of attacks in a district until a given day, the proximity of the spatially closest attack within the previous week still boosts the probability of an attack occurring in that district.

¹³ See Annex O3.

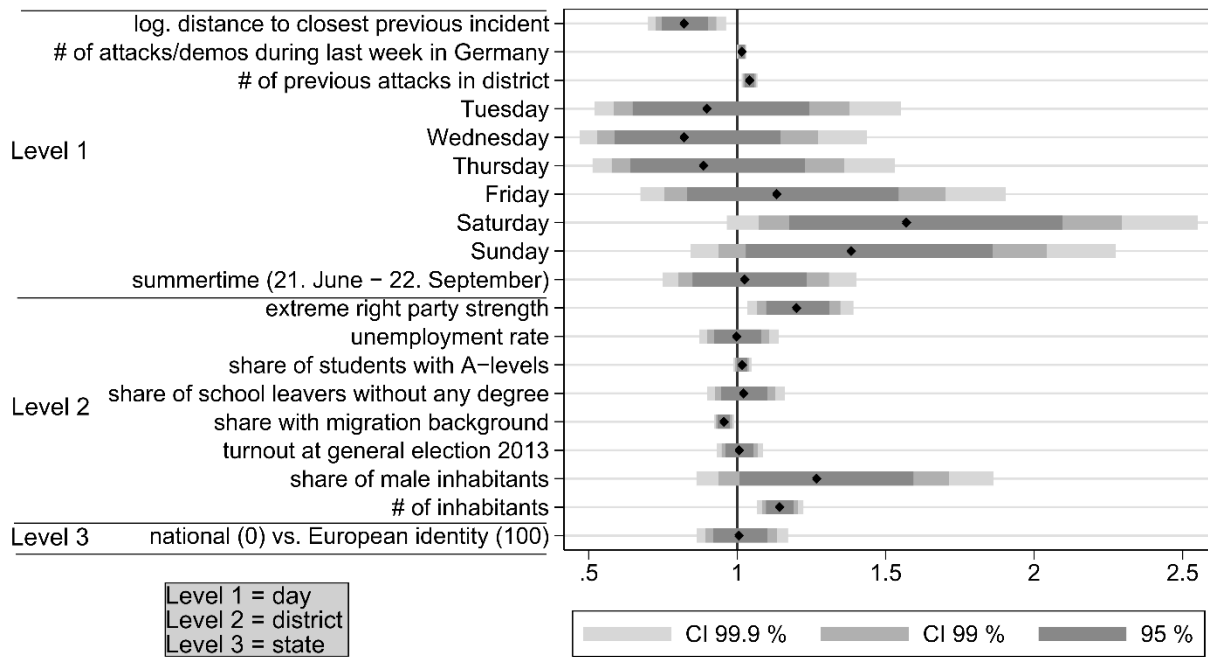
¹⁴ See Annex O4.

Table 3: Multilevel logistics regression for explaining attacks on refugees in 2015

| Variable | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---------------------|----------------------|----------------------|----------------------|
| <i>Level 1 (day)</i> | | | | |
| Log. distance to closest previous incident | | -.254 (.046)*** | -.181 (.059)** | -.198 (.048)*** |
| Log. distance to second closest previous incident | | | -.103 (.092) | |
| Log. distance to third closest previous incident | | | -.065 (.087) | |
| Cumulated number of incidences in a district | | | | .040 (.008)*** |
| Number of all incidences in previous week | | | | .015 (.005)** |
| Tuesday (Monday = reference) | | -.108 (.166) | -.112 (.166) | -.108 (.166) |
| Wednesday | | -.196 (.170) | -.202 (.170) | -.198 (.170) |
| Thursday | | -.123 (.166) | -.128 (.166) | -.121 (.166) |
| Friday | | .119 (.157) | .114 (.158) | .125 (.158) |
| Saturday | | .445 (.147)** | .443 (.147)** | .450 (.148)** |
| Sunday | | .323 (.151)* | .323 (.151)* | .325 (.151)* |
| Summer | | .023 (.095) | .023 (.095) | .023 (.095) |
| <i>Level 2 (district)</i> | | | | |
| Extreme right party strength | | .198 (.048)*** | .193 (.048)*** | .181 (.045)*** |
| Unemployment rate | | -.003 (.043) | -.004 (.042) | -.002 (.040) |
| Share of students with A-levels | | .017 (.010) | .017 (.010) | .016 (.009) |
| Share of school leavers without any degree | | .024 (.041) | .025 (.041) | .021 (.039) |
| Share with migration background | | -.050 (.011)*** | -.048 (.011)*** | -.046 (.011)*** |
| Turnout at general election 2013 | | .009 (.025) | .009 (.025) | .006 (.023) |
| Share of male inhabitants | | .267 (.123)* | .265 (.123)* | .237 (.117)* |
| Number of inhabitants | | .160 (.021)*** | .156 (.021)*** | .133 (.021)*** |
| <i>Level 3 (state = Land)</i> | | | | |
| National (0) versus European (100) identity | | .013 (.047) | .017 (.046) | .006 (.046) |
| Eastern Germany | 1.821 (.353)*** | | | |
| Constant | -6.433 (.227)*** | -20.005 (6.764)** | -19.246 (6.771)** | -18.878 (6.438)** |
| N | 146,730 | 146,730 | 146,730 | 146,730 |
| Log likelihood | -3439.777 | -3379.911 | -3377.184 | -3358.655 |
| AIC | 6887.554 | 6799.822 | 6798.368 | 6761.310 |
| BIC | 6927.140 | 6997.749 | 7016.087 | 6979.030 |

Annotations: * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$.

Figure 4: Odds ratios from the multilevel logistic regression (model 4)



For a better interpretation of the effect sizes of the two main explanatory variables, we provide plots based on the predicted probabilities. Figure 5 presents these probabilities as a function of the share of extreme right-wing parties in a district based on the data from the 2013 Bundestag election – setting the weekday and season variables to the reference categories (Monday, not summer), holding all other variables at their means and taking into account the random effects component. Since the base probability for an attack on refugees on a given day in a given district is very small, one might suspect only a small impact at first. However, as the graph shows, the probability increases about tenfold from a vote share of zero per cent to a vote share of 15 per cent (the maximum value for a district was 13 per cent). One can further use these probabilities to infer the probability of an attack (at least one) in a given district not on a single day but within a month (30 days). The corresponding probabilities for a vote share of zero and 15 per cent then are 2.0 per cent and 31.7 per cent, respectively. The substantial interpretation of the coefficient thus points to sizable influence of extreme right party strength on attacks on refugees. Moreover, it does not matter whether the vote shares from the Federal Election of 2013 or those from the European Parliament Election of 2014 are used. Exchanging the latter for the former in model 4 yields a slightly lower and still highly significant positive effect ($b = 0.131$; $p < 0.001$).

Figure 5: Predicted probabilities for attacks on refugees based on the strength of extreme right and right-wing populist parties

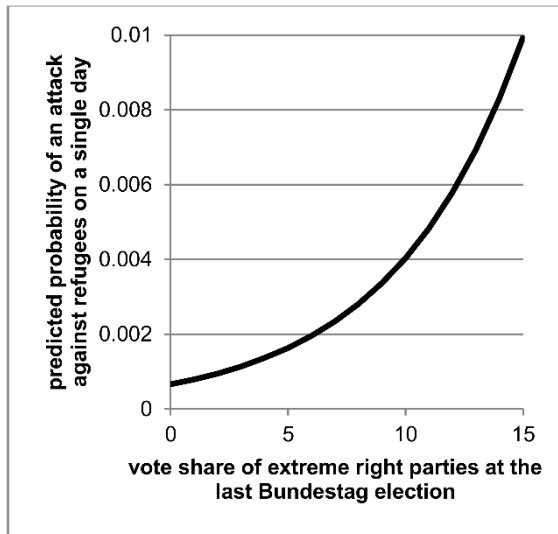
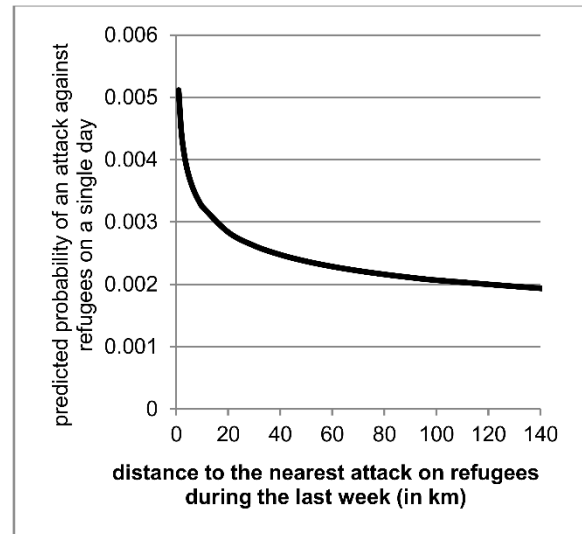


Figure 6: Predicted probabilities for attacks on refugees based on the contagion variable



The effect of the generated distance variable for testing a contagion effect is not as large but still substantial. As Figure 6 shows, the lower the distance of a given district to the closest attack in the previous week the higher the probability of an attack on refugees in that district (again holding all other variables at their means and including the random effects component). This finding strongly suggests a contagion effect of this kind of political violence. The probability for an attack rises from about 0.0014 for a distance of 600 kilometres to more than threefold for a distance of ten kilometres or less – and particularly in the immediate vicinity is the effect strongest. Translating these values again to the probability of at least one attack within a month in a given district, the corresponding values are 4.2 per cent (600 kilometres) and 19.6 per cent (1 kilometre). Using not the logarithm of the distance but the linear version of this variable yields also a significant contagion effect, yet with a discernibly worse fit according to the change in the log likelihoods.¹⁵ This means that – as expected – the contagion effect disproportionately fades with a rise in distance of the closest attack in the previous week. In sum, the occurrence of attacks on refugees seems to have a lot to do with the dynamic of previously occurring proximate attacks.

Besides behavioural contagion, there is also a noticeable explanatory power of the variables that take into account a possible temporal pattern. Specifically, the probability of attacks on refugees is higher on average on weekends. A seasonal variation with more attacks occurring

¹⁵ See Annex O5.

in summer months, as has been found in other studies (Braun 2011; Braun and Koopmans 2010; Olzak and Olivier 1998), cannot be detected though.

Only some of the social structural determinants on the district level exhibit noticeable explanatory power. As the odds ratios in Figure 4 show, the higher the share of people with a migration background in a district the lower the probability of an attack on refugees ($p < 0.001$). Apart from this variable, only two other socio-structural controls display a marked effect. The share of males and the number of inhabitants in a district ($p = 0.043$ and $p < 0.001$ respectively) are both positively associated with the dependent variable.¹⁶ None of the other control variables show a significant effect. Neither economic deprivation (measured via unemployment rate and education)¹⁷, nor apathy (measured via voter abstention rate), nor the identity-based factor based on the Eurobarometer¹⁸ data are supported by the data as relevant determinants. Only the education variable measuring the share of those who have reached university entrance level is significant on the ten per cent level ($p = 0.079$) but with an unexpected positive effect. It seems that this effect can be attributed to another background variable: rural vs. urban living environment. It vanishes as soon as population density is controlled for instead of the raw number of inhabitants.

Overall, controlling for a number of other variables, the two hypotheses regarding the strength of extreme right-wing parties as well as the closeness of previous attacks are supported by the results.¹⁹ Our findings regarding the influence of extreme parties stand in a clear contrast to the idea of a mitigating effect of those parties with regard to negative sentiments against foreigners – these parties do not seem to defuse those sentiments. This runs contrary to the findings by Braun and Koopmans (2010) for Germany in the early 1990s and also to those by

¹⁶ When using the population density instead of the number of inhabitants we still obtain a significant positive effect ($p < 0.05$), but the model fit clearly drops (see Annex O6).

¹⁷ Using the alternative measurement of deprivation via net migration and life expectancy yields partially unexpected results (see Annex O7). On the one hand, the migration variable measuring the balance of migration in a district between 2010 and 2014 shows the anticipated negative effect of net emigration on the odds of an attack that is already known from other studies (Braun 2011; Braun and Koopmans 2010). On the other hand, however, a high life expectancy unexpectedly increases the probability of an attack ($p < 0.001$). Using the mortality rate instead of life expectancy corroborates this unforeseen result (see Annex O8). These findings do not affect the results regarding the variables we are mainly interested in and the unexpected effects only concern control variables in the tested models. However, they are clearly puzzling and deserve further investigation, as they also stand in contrast to previous findings (Braun 2011; Braun and Koopmans 2010).

¹⁸ The alternative ALLBUS-based identity-variable measuring xenophobia is significant on the 10%-level and has the expected positive effect (see Annex O9).

¹⁹ The models are robust to different model specifications such as the number of integration points, the type of integration (adaptive quadrature or numerical) and the Stata routine (melogit, xtmelogit or GLAMM) as well as an alternative estimation that uses the QR decomposition of the variance-components matrix. See Annex O11-14.

Braun (2011), which showed no effect of anti-immigrant parties in the Netherlands in the early 2000s.

What can explain these different findings, especially regarding the German context? First, those results for Germany lie back more than twenty years and refer to a time when the Eastern German party system was still in development and extreme right parties had not quite taken root; the extreme right party NPD was still recovering from a crisis at that time and gained strength again only in the mid-2000s. Secondly, Braun and Koopmans (2010) measured extreme right party strength based on votes only for the REP in the 1994 Bundestag elections. This may explain the channelling effect, i.e. an inhibitive impact of extreme right parties on antiforeigner violence, which they find in their study. In 1994, the Republicans were much stronger in some West German states (e.g. Bavaria: 2.9%, Baden Wuerttemberg 3.2%) while they had not really gained ground in most East-German states up to that date: their vote share was between .1% (Brandenburg and Saxony) and .9% (Saxony-Anhalt, Mecklenburg-Wet Pomerania). On the whole, the East German party system of 1994 was not yet consolidated and extreme right parties hardly constituted an established option. This has clearly changed since then. There are not only several extreme right parties that have to be taken into account as of 2015 (see Table 1). Also, the rise of the AfD has given an anti-immigrant or xenophobic stance a stronger expression in the political arena. These developments may well explain the differences in the results. Right-wing parties have particularly taken hold in some states and districts, and this could lead to a diffuse mobilising effect regarding violence against refugees. The data does not allow probing the concrete mechanism behind the identified effect. If the assumptions holds true that these parties and their messages have a legitimising effect that can sway certain individuals, this would best be investigated on the individual level – a certainly very difficult but also highly rewarding task for further research. Such an approach could also help to ascertain whether a mobilizing effect by radical right parties only occurs in a specific context. Particularly with regard to the German context, East and West Germany could show differences in light of the historical background of the divided country.

With the data at hand, we can at least look for signs whether the influence of radical and populist right parties works differently in these two larger regions. We have therefore performed separate models for the two country parts. It should be noted though that because of the much lower number of events for the dependent variable in the Western part of Germany (238 in more than 118,000 observations compared to 365 events in 28.000 for East-

Germany), there is less information for the estimation and the model is to be interpreted with caution. Also, the number of units on the highest level (Länder) is so low in the separate analyses that we removed that third level and modelled a two-level model with fixed effects dummies for the Länder. The findings for East Germany show largely the same pattern of significant effects for those variables that are significant in the main model for entire Germany.²⁰ Exceptions are the share of people with a migration background (probably because of little variance), the share of male inhabitants and the district population, which are all not significant. In the model for West Germany, all of those variables that are significant in the main model show the same directions in the restricted sample. However, they all fall short of being significant, except for cumulated attacks in a district. Altogether, although the information basis for the estimation in West Germany alone is far from ideal, the results do not suggest that the party strength variable works differently in that part of the country, i.e. prevents the transformation of anti-foreigner or anti-refugee sentiment into violent actions against them.

Turning finally to the variable for modelling a behavioural contagion effect based on the occurrence of a spatially and temporally proximate attack is still highly important even when controlling for a broad array of structural determinants as well as for the overall temporal concentration of attacks in Germany during the previous week and the districts' path dependencies – which can both be seen as further variables specifying a diffusion dynamic. This suggests that behavioural contagion plays an important role in explaining attacks on refugees. Individual perpetrators may set an example for others in the vicinity who again fuel similar acts nearby, thereby encouraging further violence against refugees.

Conclusion

Germany is a primary case for studying the roots of violent actions against foreigners. Not only did the country experience a wave of such attacks in the early 1990s; the refugee inflows of 2015 also led to a distinct rise in attacks on refugees. What is specific to the German case is that the debate in 2015 revolved around the question of whether those attacks were a particularity of the Eastern part of Germany – thereby implying a certain historical legacy and socialisation as a possible cause for these attacks. In line with previous results for the early 1990s (Krueger and Pischke 1997; Braun and Koopmans 2010), our findings suggest that the

²⁰ See Annex O10a and O10b.

East German Länder are indeed (still) special in that they exhibit a higher probability of such attacks to occur. However, evidence from these studies suggests that this difference can be ascribed to a number of social structural factors, with regard to which the German states systematically differ. At the same time, only some of the socio-structural determinants have shown explanatory power in the models we tested. Although deprivation, apathy, and identity-based attitudes have all been shown to have an impact on anti-foreigner sentiment in existing research, our findings only partly corroborate the corresponding variables as important predictors of attacks on refugees occurring on a given day in a given district. Of the substantially interesting controls, the share of people with a migration background is probably most relevant. It has a highly significant and expected negative effect on attacks on refugees, which supports the idea that these assaults are indeed more driven by a “fear of the unknown”. The co-presence of foreigners, in contrast, fosters a social climate in which ethnic violence is less likely to occur.

Yet, the results from the analysis add to existing research as they support the influence of two explanatory factors we hypothesised to be particularly relevant. First, the political context matters. A greater strength of extreme right and populist right-wing parties at the German Federal Election of 2013 (and the election to the European Parliament in 2014 for robustness) incites violence against refugees; according to our models, this variable strongly increases the probability of attacks. In contrast to the findings of Braun and Koopmans (2012), our models therefore do not show any inhibiting effect of radical right-wing parties on attacks against refugees. Second, a considerable part of the explanation for these attacks seems to consist of a dangerous dynamic of behavioural contagion. The evidence we have presented shows that the smaller the distance to the closest attack in the previous week the higher the probability of an attack to occur in a given district on a given day. This even holds true when controlling for a set of structural determinants and for two further diffusion variables: the total number of attacks occurring in Germany within the previous week and the cumulated number of attacks in a district until a given day, which both increase the probability of attacks as well. Apparently, those who commit violent acts against refugees may often be (further) motivated by attacks they take as an example, and it is especially very recent attacks closely nearby that exert this influence.

On the one hand, this is bad news for an open society as attacks in one place additionally increase the probability of further attacks in the same place or nearby. On the other hand, however, there is also a positive side to the influence of the contagion variable. Such a

dynamic influence, unlike the social structural factors, could mean more leeway for the state to intervene. The results therefore point to the importance of the state to step in and to prevent others from copying previous attacks. Apart from the state, civil society may also play an important role in halting the dynamic of behavioural contagion. In 2015, the public remained largely quiet in face of the numerous incidents presented above. In contrast, in the winter of 1992 hundreds of thousands of citizens took part in candle-lit demonstrations against a wave of attacks on refugees and immigrants that culminated in the pogrom-like riots against former Vietnamese contract workers in Rostock Lichtenhagen, and the arson attack on two Turkish families in Mölln (Kostede 1993). Remarkably, these demonstrations against xenophobia and violence and for a peaceful coexistence had an effect: while 17 per cent of East Germans showed understanding for violent excesses against foreigners in October 1992, this number dropped to eight per cent in January 1993 (for Western Germany in the same period: from twelve per cent to five per cent). In addition, the number of acts of violence against immigrants and foreigners decreased significantly in the aftermath of the demonstrations. Hence, it was the public protests that helped to end the wave of hostilities against foreigners. This brief detour offers a more optimistic view on the issue. Although one can certainly presume the larger social setting to play a role in the occurrence of attacks against refugees, this is not an inescapable phenomenon but one that is amenable to intentional interventions.

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. * O1: Null model

Note: N=Obs used in calculating BIC; see [R] BIC note.

. * O2: Robustness check: Model 4 + East Germany Dummy

. timer on 6

```
. melogit av ostdummy rechte_kreis_anteil log_dist_1_mit_demos identitaet1b alq
bildung1 bildung2 mgh wahlbeteiligung_kreis_anteil maenner_anteil_kreis einwohner_kre
> is summer di_dummy mi_dummy do_dummy fr_dummy sa_dummy so_dummy cum_anschlag_kreis
anzahl_mit_demos || land: || kreis_id:
```

Fitting fixed-effects model:

```
Iteration 0: log likelihood = -13988.821
Iteration 1: log likelihood = -3558.531
Iteration 2: log likelihood = -3404.1614
Iteration 3: log likelihood = -3383.1157
Iteration 4: log likelihood = -3383.0166
Iteration 5: log likelihood = -3383.0166
```

Refining starting values:

Grid node 0: log likelihood = -3398.6693

Fitting full model:

```
Iteration 0: log likelihood = -3398.6693 (not concave)
Iteration 1: log likelihood = -3381.7361 (not concave)
Iteration 2: log likelihood = -3376.3051 (not concave)
Iteration 3: log likelihood = -3373.9554 (not concave)
Iteration 4: log likelihood = -3370.794
Iteration 5: log likelihood = -3363.6773
Iteration 6: log likelihood = -3359.0199
Iteration 7: log likelihood = -3358.3941
Iteration 8: log likelihood = -3358.3742
Iteration 9: log likelihood = -3358.3742
```

Mixed-effects logistic regression Number of obs = 146,730

| | | Observations per Group | | |
|----------------|---------------|------------------------|---------|---------|
| Group Variable | No. of Groups | Minimum | Average | Maximum |
| land | 16 | 365 | 9,170.6 | 35,040 |
| kreis_id | 402 | 365 | 365.0 | 365 |

Integration method: mvaghermite Integration pts. = 7

Log likelihood = -3358.3742 Wald chi2(20) = 265.51
Prob > chi2 = 0.0000

| | av | Coef. | Std. Err. | z | P> z | [95% Conf. Interval] | |
|------------------------------|------------|-----------|-----------|-------|-------|----------------------|-----------|
| ostdummy | | .3245832 | .4309928 | 0.75 | 0.451 | -.5201472 | 1.169314 |
| rechte_kreis_anteil | | .169134 | .0476198 | 3.55 | 0.000 | .0758009 | .2624671 |
| log_dist_1_mit_demos | | -.1949594 | .0485363 | -4.02 | 0.000 | -.2900887 | -.09983 |
| identitaet1b | | .0191292 | .0470959 | 0.41 | 0.685 | -.0731771 | .1114355 |
| alq | | -.0031909 | .0405006 | -0.08 | 0.937 | -.0825707 | .0761888 |
| bildung1 | | .0143643 | .0095243 | 1.51 | 0.132 | -.004303 | .0330317 |
| bildung2 | | .0118016 | .0403051 | 0.29 | 0.770 | -.067195 | .0907982 |
| mgh | | -.0398779 | .0135516 | -2.94 | 0.003 | -.0664386 | -.0133172 |
| wahlbeteiligung_kreis_anteil | | .0113322 | .0243972 | 0.46 | 0.642 | -.0364854 | .0591498 |
| maenner_anteil_kreis | | .2300015 | .1169987 | 1.97 | 0.049 | .0006882 | .4593148 |
| einwohner_kreis | | .1246579 | .0233892 | 5.33 | 0.000 | .0788159 | .1705 |
| summer | | .0236685 | .0952162 | 0.25 | 0.804 | -.1629518 | .2102889 |
| di_dummy | | -.1082644 | .1663648 | -0.65 | 0.515 | -.4343335 | .2178047 |
| mi_dummy | | -.1977074 | .1702522 | -1.16 | 0.246 | -.5313957 | .1359808 |
| do_dummy | | -.1211984 | .1663598 | -0.73 | 0.466 | -.4472576 | .2048608 |
| fr_dummy | | .1246603 | .1579073 | 0.79 | 0.430 | -.1848323 | .4341529 |
| sa_dummy | | .4503482 | .1477221 | 3.05 | 0.002 | .1608182 | .7398782 |
| so_dummy | | .3247953 | .1510752 | 2.15 | 0.032 | .0286934 | .6208972 |
| cum_anschlag_kreis | | .0398787 | .0077503 | 5.15 | 0.000 | .0246885 | .055069 |
| anzahl_mit_demos_2 | | .0151636 | .0048054 | 3.16 | 0.002 | .0057452 | .0245819 |
| _cons | | -18.5397 | 6.442263 | -2.88 | 0.004 | -31.1663 | -5.913093 |
| land | | | | | | | |
| | var(_cons) | .0940798 | .0639093 | | | .0248466 | .3562258 |
| land>kreis_id | | | | | | | |
| | var(_cons) | .221846 | .0759269 | | | .1134299 | .4338861 |

```

-----
LR test vs. logistic model: chi2(2) = 49.28          Prob > chi2 = 0.0000
Note: LR test is conservative and provided only for reference.

.      eststo model_o2
.      timer off 6
.      timer list 6
6:      60.44 /      1 =      60.4380
.      xtmrho
.      estat ic

Akaike's information criterion and Bayesian information criterion
-----
      Model |      Obs  ll(null)  ll(model)      df      AIC      BIC
-----+-----
      model_o2 |      146,730      .  -3358.374      23      6762.748      6990.364
-----
      Note: N=Obs used in calculating BIC; see [R] BIC note.

```



```
-----
LR test vs. logistic model: chi2(2) = 49.75          Prob > chi2 = 0.0000
```

Note: LR test is conservative and provided only for reference.

```
.      eststo model_o3
.      timer off 7
.      timer list 7
7:      53.09 /      1 =      53.0910
.      xtmrho
.      estat ic
```

Akaike's information criterion and Bayesian information criterion

```
-----
      Model |      Obs  ll(null)  ll(model)      df      AIC      BIC
-----+-----
      model_o3 |      146,730      .  -3358.045      22      6760.089      6977.809
-----
```

Note: N=Obs used in calculating BIC; see [R] BIC note.

```
.
```

. * O4: Robustness check: right without AfD

```
. timer on 8

. melogit av log_dist_1_mit_demos anzahl_mit_demos cum_anschlag_kreis di_dummy
mi_dummy do_dummy fr_dummy sa_dummy so_dummy summer rechte_oa_kreis_anteil alq bildung1 b
> ildung2 mgh wahlbeteiligung_kreis_anteil maenner_anteil_kreis einwohner_kreis identitaetlb
|| land: || kreis_id:
```

Fitting fixed-effects model:

```
Iteration 0: log likelihood = -13988.851
Iteration 1: log likelihood = -3559.7678
Iteration 2: log likelihood = -3410.4509
Iteration 3: log likelihood = -3390.3889
Iteration 4: log likelihood = -3390.2682
Iteration 5: log likelihood = -3390.2682
```

Refining starting values:

```
Grid node 0: log likelihood = -3402.9084
```

Fitting full model:

```
Iteration 0: log likelihood = -3402.9084 (not concave)
Iteration 1: log likelihood = -3386.3088 (not concave)
Iteration 2: log likelihood = -3380.8657 (not concave)
Iteration 3: log likelihood = -3378.5281 (not concave)
Iteration 4: log likelihood = -3374.9454
Iteration 5: log likelihood = -3364.7302
Iteration 6: log likelihood = -3361.4073
Iteration 7: log likelihood = -3361.2645
Iteration 8: log likelihood = -3361.2637
Iteration 9: log likelihood = -3361.2637
```

Mixed-effects logistic regression Number of obs = 146,730

| | | Observations per Group | | |
|-------|----------|------------------------|---------|---------|
| Group | Variable | No. of Groups | Minimum | Average |
| | land | 16 | 365 | 9,170.6 |
| | kreis_id | 402 | 365 | 365.0 |

Integration method: mvaghermite Integration pts. = 7

Log likelihood = -3361.2637 Wald chi2(19) = 235.56
Prob > chi2 = 0.0000

| | av | Coef. | Std. Err. | z | P> z | [95% Conf. Interval] | |
|------------------------------|------------|-----------|-----------|-------|-------|----------------------|-----------|
| log_dist_1_mit_demos | | -.1993294 | .0484201 | -4.12 | 0.000 | -.294231 | -.1044278 |
| anzahl_mit_demos_2 | | .0149863 | .0048043 | 3.12 | 0.002 | .0055701 | .0244024 |
| cum_anschlag_kreis | | .0406458 | .007793 | 5.22 | 0.000 | .0253718 | .0559198 |
| di_dummy | | -.1081961 | .166364 | -0.65 | 0.515 | -.4342636 | .2178713 |
| mi_dummy | | -.1976287 | .1702513 | -1.16 | 0.246 | -.5313152 | .1360578 |
| do_dummy | | -.1211235 | .166359 | -0.73 | 0.467 | -.4471811 | .204934 |
| fr_dummy | | .1248312 | .1579056 | 0.79 | 0.429 | -.184658 | .4343204 |
| sa_dummy | | .4504301 | .1477211 | 3.05 | 0.002 | .160902 | .7399581 |
| so_dummy | | .3248395 | .1510741 | 2.15 | 0.032 | .0287397 | .6209393 |
| summer | | .0236121 | .0952098 | 0.25 | 0.804 | -.1629957 | .21022 |
| rechte_oa_kreis_anteil | | .2830694 | .0926375 | 3.06 | 0.002 | .1015033 | .4646355 |
| alq | | -.0073344 | .0416089 | -0.18 | 0.860 | -.0888864 | .0742176 |
| bildung1 | | .014162 | .0095527 | 1.48 | 0.138 | -.004561 | .032885 |
| bildung2 | | .015864 | .0408557 | 0.39 | 0.698 | -.0642117 | .0959396 |
| mgh | | -.0415385 | .0117555 | -3.53 | 0.000 | -.0645789 | -.0184981 |
| wahlbeteiligung_kreis_anteil | | .0176262 | .0239752 | 0.74 | 0.462 | -.0293643 | .0646168 |
| maenner_anteil_kreis | | .1750074 | .1187476 | 1.47 | 0.141 | -.0577337 | .4077486 |
| einwohner_kreis | | .1277402 | .0221603 | 5.76 | 0.000 | .0843068 | .1711735 |
| identitaetlb | | -.015638 | .0537193 | -0.29 | 0.771 | -.1209259 | .0896499 |
| _cons | | -16.33739 | 6.527484 | -2.50 | 0.012 | -29.13102 | -3.543756 |
| land | | | | | | | |
| | var(_cons) | .1500339 | .1037022 | | | .038712 | .5814774 |
| land>kreis_id | | | | | | | |
| | var(_cons) | .2193871 | .0771976 | | | .1100757 | .4372506 |

LR test vs. logistic model: $\chi^2(2) = 58.01$ Prob > $\chi^2 = 0.0000$

Note: LR test is conservative and provided only for reference.

```
.      eststo model_o4
.      timer off 8
.      timer list 8
8:      57.79 /      1 =      57.7890
.      xtmrho
.      estat ic
```

Akaike's information criterion and Bayesian information criterion

| Model | Obs | ll(null) | ll(model) | df | AIC | BIC |
|----------|---------|----------|-----------|----|----------|----------|
| model_o4 | 146,730 | . | -3361.264 | 22 | 6766.527 | 6984.247 |

Note: N=Obs used in calculating BIC; see [R] BIC note.

```
.
.
```

. * O5: Robustness check: linear distance instead of logarithm

```
. timer on 8

. melogit av rechte_kreis_anteil distance_1_mit_demos identitaetlb alq bildung1
bildung2 mgh wahlbeteiligung_kreis_anteil maenner_anteil_kreis einwohner_kreis summer
> di_dummy mi_dummy do_dummy fr_dummy sa_dummy so_dummy cum_anschlag_kreis anzahl_mit_demos
|| land: || kreis_id:
```

Fitting fixed-effects model:

```
Iteration 0: log likelihood = -13989.152
Iteration 1: log likelihood = -3562.6577
Iteration 2: log likelihood = -3413.3069
Iteration 3: log likelihood = -3392.3637
Iteration 4: log likelihood = -3392.2439
Iteration 5: log likelihood = -3392.2439
```

Refining starting values:

```
Grid node 0: log likelihood = -3404.0524
```

Fitting full model:

```
Iteration 0: log likelihood = -3404.0524 (not concave)
Iteration 1: log likelihood = -3387.411 (not concave)
Iteration 2: log likelihood = -3381.9697 (not concave)
Iteration 3: log likelihood = -3379.624 (not concave)
Iteration 4: log likelihood = -3376.1999
Iteration 5: log likelihood = -3366.5305
Iteration 6: log likelihood = -3364.1281
Iteration 7: log likelihood = -3364.0542
Iteration 8: log likelihood = -3364.0533
Iteration 9: log likelihood = -3364.0533
```

Mixed-effects logistic regression Number of obs = 146,730

| | | Observations per Group | | |
|-------|----------|------------------------|---------|---------|
| Group | Variable | No. of Groups | Minimum | Average |
| | land | 16 | 365 | 9,170.6 |
| | kreis_id | 402 | 365 | 365.0 |

Integration method: mvaghermite Integration pts. = 7

Log likelihood = -3364.0533 Wald chi2(19) = 241.16
Prob > chi2 = 0.0000

| | av | Coef. | Std. Err. | z | P> z | [95% Conf. Interval] | |
|------------------------------|------------|-----------|-----------|-------|-------|----------------------|-----------|
| rechte_kreis_anteil | | .1832545 | .0462693 | 3.96 | 0.000 | .0925683 | .2739406 |
| distance_1_mit_demos | | -.0017867 | .0008035 | -2.22 | 0.026 | -.0033615 | -.0002119 |
| identitaetlb | | .001554 | .0464389 | 0.03 | 0.973 | -.0894645 | .0925725 |
| alq | | .0028562 | .0408496 | 0.07 | 0.944 | -.0772077 | .08292 |
| bildung1 | | .0167485 | .0093395 | 1.79 | 0.073 | -.0015567 | .0350536 |
| bildung2 | | .0218717 | .0392782 | 0.56 | 0.578 | -.0551121 | .0988554 |
| mgh | | -.045919 | .0111066 | -4.13 | 0.000 | -.0676875 | -.0241506 |
| wahlbeteiligung_kreis_anteil | | .0089863 | .0237228 | 0.38 | 0.705 | -.0375096 | .0554822 |
| maenner_anteil_kreis | | .2342937 | .1184112 | 1.98 | 0.048 | .0022121 | .4663754 |
| einwohner_kreis | | .1407815 | .020911 | 6.73 | 0.000 | .0997967 | .1817663 |
| summer | | .0180289 | .0951462 | 0.19 | 0.850 | -.1684542 | .2045119 |
| di_dummy | | -.1096911 | .1663002 | -0.66 | 0.510 | -.4356334 | .2162513 |
| mi_dummy | | -.20063 | .1701961 | -1.18 | 0.238 | -.5342083 | .1329482 |
| do_dummy | | -.1233351 | .1662953 | -0.74 | 0.458 | -.4492679 | .2025976 |
| fr_dummy | | .1217125 | .1578497 | 0.77 | 0.441 | -.1876673 | .4310922 |
| sa_dummy | | .449748 | .1476439 | 3.05 | 0.002 | .1603712 | .7391248 |
| so_dummy | | .3254566 | .1510009 | 2.16 | 0.031 | .0295003 | .6214128 |
| cum_anschlag_kreis | | .0416753 | .0078013 | 5.34 | 0.000 | .026385 | .0569655 |
| anzahl_mit_demos_2 | | .0170022 | .0048247 | 3.52 | 0.000 | .0075458 | .0264585 |
| _cons | | -19.82903 | 6.511183 | -3.05 | 0.002 | -32.59071 | -7.067343 |
| land | | | | | | | |
| | var(_cons) | .1026396 | .0706791 | | | .0266174 | .3957897 |
| land>kreis_id | | | | | | | |
| | var(_cons) | .2418584 | .0780248 | | | .1285166 | .4551591 |

LR test vs. logistic model: $\chi^2(2) = 56.38$ Prob > $\chi^2 = 0.0000$

Note: LR test is conservative and provided only for reference.

```
.      eststo model_o5
.      timer off 8
.      timer list 8
8:      116.04 /      2 =      58.0200
.      xtmrho
.      estat ic
```

Akaike's information criterion and Bayesian information criterion

| Model | Obs | ll(null) | ll(model) | df | AIC | BIC |
|----------|---------|----------|-----------|----|----------|----------|
| model_o5 | 146,730 | . | -3364.053 | 22 | 6772.107 | 6989.826 |

Note: N=Obs used in calculating BIC; see [R] BIC note.

.

. * O6: Robustness check: population density instead of number of inhabitants

. timer on 9

```
. melogit av rechte_kreis_anteil log_dist_1_mit_demos identitaet1b alq bildung1
bildung2 mgh wahlbeteiligung_kreis_anteil maenner_anteil_kreis einwohnerdichte_kreis
> summer di_dummy mi_dummy do_dummy fr_dummy sa_dummy so_dummy cum_anschlag_kreis
anzahl_mit_demos || land: || kreis_id:
```

Fitting fixed-effects model:

```
Iteration 0: log likelihood = -13990.227
Iteration 1: log likelihood = -3568.6136
Iteration 2: log likelihood = -3422.4867
Iteration 3: log likelihood = -3405.4655
Iteration 4: log likelihood = -3405.3981
Iteration 5: log likelihood = -3405.3981
```

Refining starting values:

Grid node 0: log likelihood = -3413.0214

Fitting full model:

```
Iteration 0: log likelihood = -3413.0214 (not concave)
Iteration 1: log likelihood = -3403.7178 (not concave)
Iteration 2: log likelihood = -3402.067 (not concave)
Iteration 3: log likelihood = -3387.8312
Iteration 4: log likelihood = -3380.2261
Iteration 5: log likelihood = -3379.1682
Iteration 6: log likelihood = -3378.9222
Iteration 7: log likelihood = -3378.899
Iteration 8: log likelihood = -3378.8987
```

Mixed-effects logistic regression Number of obs = 146,730

| | | Observations per Group | | |
|-------|----------|------------------------|---------|---------|
| Group | Variable | No. of Groups | Minimum | Average |
| land | | 16 | 365 | 9,170.6 |
| | kreis_id | 402 | 365 | 365.0 |

Integration method: mvaghermite Integration pts. = 7

Log likelihood = -3378.8987 Wald chi2(19) = 152.48
Prob > chi2 = 0.0000

| | av | Coef. | Std. Err. | z | P> z | [95% Conf. Interval] | |
|------------------------------|------------|-----------|-----------|-------|-------|----------------------|-----------|
| rechte_kreis_anteil | | .1566476 | .0506954 | 3.09 | 0.002 | .0572866 | .2560087 |
| log_dist_1_mit_demos | | -.2131845 | .0483427 | -4.41 | 0.000 | -.3079346 | -.1184345 |
| identitaet1b | | .0472442 | .048742 | 0.97 | 0.332 | -.0482884 | .1427768 |
| alq | | .0259653 | .045795 | 0.57 | 0.571 | -.0637912 | .1157218 |
| bildung1 | | .0153382 | .0099028 | 1.55 | 0.121 | -.0040708 | .0347473 |
| bildung2 | | .0169137 | .0419012 | 0.40 | 0.686 | -.0652111 | .0990384 |
| mgh | | -.050077 | .0145855 | -3.43 | 0.001 | -.078664 | -.02149 |
| wahlbeteiligung_kreis_anteil | | .0313853 | .0249164 | 1.26 | 0.208 | -.01745 | .0802207 |
| maenner_anteil_kreis | | .3263127 | .1219142 | 2.68 | 0.007 | .0873652 | .5652601 |
| einwohnerdichte_kreis | | .0002982 | .0001493 | 2.00 | 0.046 | 5.66e-06 | .0005908 |
| summer | | .0276484 | .0951717 | 0.29 | 0.771 | -.1588847 | .2141816 |
| di_dummy | | -.1079114 | .1663296 | -0.65 | 0.516 | -.4339115 | .2180886 |
| mi_dummy | | -.1974674 | .1702158 | -1.16 | 0.246 | -.5310842 | .1361493 |
| do_dummy | | -.1211859 | .1663263 | -0.73 | 0.466 | -.4471795 | .2048077 |
| fr_dummy | | .1254494 | .1578654 | 0.79 | 0.427 | -.1839612 | .4348599 |
| sa_dummy | | .4505802 | .1476808 | 3.05 | 0.002 | .1611311 | .7400293 |
| so_dummy | | .324902 | .1510378 | 2.15 | 0.031 | .0288734 | .6209306 |
| cum_anschlag_kreis | | .0472829 | .0082137 | 5.76 | 0.000 | .0311843 | .0633815 |
| anzahl_mit_demos_2 | | .0140978 | .0048049 | 2.93 | 0.003 | .0046804 | .0235151 |
| _cons | | -23.64617 | 6.776335 | -3.49 | 0.000 | -36.92755 | -10.3648 |
| land | | | | | | | |
| | var(_cons) | .1479389 | .1200566 | | | .0301514 | .7258661 |
| land>kreis_id | | | | | | | |
| | var(_cons) | .3185228 | .0936912 | | | .178964 | .5669116 |

LR test vs. logistic model: chi2(2) = 53.00 Prob > chi2 = 0.0000

Note: LR test is conservative and provided only for reference.

```
.      eststo model_o6
.      timer off 9
.      timer list 9
9:      57.65 /      1 =      57.6490
.      xtmrho
.      estat ic
```

Akaike's information criterion and Bayesian information criterion

| Model | Obs | ll (null) | ll (model) | df | AIC | BIC |
|----------|---------|-----------|------------|----|----------|----------|
| model_o6 | 146,730 | . | -3378.899 | 22 | 6801.797 | 7019.517 |

Note: N=Obs used in calculating BIC; see [R] BIC note.

.

```

. * O7: Robustness check: life expectancy + migration (instead of unemployment and education)
.      timer on 10

.      melogit av      rechte_kreis_anteil log_dist_1_mit_demos identitaetlb mgh
wahlbeteiligung_kreis_anteil maenner_anteil_kreis einwohner_kreis summer di_dummy mi_dummy do
> _dummy fr_dummy sa_dummy so_dummy cum_anschlag_kreis anzahl_mit_demos lebenserw wansaldo1014
|| land: || kreis_id:

Fitting fixed-effects model:

Iteration 0:  log likelihood = -13988.79
Iteration 1:  log likelihood = -3551.9672
Iteration 2:  log likelihood = -3387.1473
Iteration 3:  log likelihood = -3358.66
Iteration 4:  log likelihood = -3358.5166
Iteration 5:  log likelihood = -3358.5166

Refining starting values:

Grid node 0:  log likelihood = -3392.9812

Fitting full model:

Iteration 0:  log likelihood = -3392.9812 (not concave)
Iteration 1:  log likelihood = -3358.5425 (not concave)
Iteration 2:  log likelihood = -3352.7663 (not concave)
Iteration 3:  log likelihood = -3351.7005
Iteration 4:  log likelihood = -3346.9277
Iteration 5:  log likelihood = -3346.8977
Iteration 6:  log likelihood = -3346.8975

Mixed-effects logistic regression              Number of obs      =      146,730

-----
Group Variable |      No. of      Observations per Group
              |      Groups      Minimum      Average      Maximum
-----+-----
      land |      16      365      9,170.6      35,040
 kreis_id |     402      365      365.0      365
-----

Integration method: mvaghermite              Integration pts. =          7

Wald chi2(18) =      336.50
Log likelihood = -3346.8975                  Prob > chi2 =      0.0000

-----
              av |      Coef.      Std. Err.      z      P>|z|      [95% Conf. Interval]
-----+-----
      rechte_kreis_anteil |      .1341194      .0390673      3.43      0.001      .0575488      .21069
      log_dist_1_mit_demos |     -.2266864      .0488324     -4.64      0.000     -.3223961     -.1309766
      identitaetlb |     -.0031976      .0361988     -0.09      0.930     -.0741459      .0677507
      mgh |     -.0465297      .0098935     -4.70      0.000     -.0659206     -.0271388
 wahlbeteiligung_kreis_anteil |     -.0550801      .0225946     -2.44      0.015     -.0993646     -.0107955
      maenner_anteil_kreis |      .0814933      .1031715      0.79      0.430     -.1207191      .2837058
      einwohner_kreis |      .330811      .0542299      6.10      0.000      .2245223      .4370997
      summer |      .0278702      .0952158      0.29      0.770     -.1587494      .2144898
      di_dummy |     -.1080213      .1663691     -0.65      0.516     -.4340987      .2180562
      mi_dummy |     -.1975627      .1702555     -1.16      0.246     -.5312574      .136132
      do_dummy |     -.1211225      .1663646     -0.73      0.467     -.447191      .2049461
      fr_dummy |      .1258111      .1579067      0.80      0.426     -.1836804      .4353026
      sa_dummy |      .450576      .1477255      3.05      0.002      .1610394      .7401126
      so_dummy |      .3250421      .1510786      2.15      0.031      .0289336      .6211507
      cum_anschlag_kreis |      .0450416      .0081088      5.55      0.000      .0291486      .0609346
      anzahl_mit_demos_2 |      .0140347      .0048048      2.92      0.003      .0046174      .023452
      lebenserw |      .3573067      .0936271      3.82      0.000      .1738011      .5408124
      wansaldo1014 |     -.0409968      .0104468     -3.92      0.000     -.0614722     -.0205215
      _cons |     -34.98263      8.019877     -4.36      0.000     -50.7013     -19.26396
-----
land |
      var(_cons) |      .0603157      .045183      .0138927      .2618621
-----
land>kreis_id |
      var(_cons) |      .145925      .0653192      .0606895      .3508696
-----

LR test vs. logistic model: chi2(2) = 23.24              Prob > chi2 = 0.0000

Note: LR test is conservative and provided only for reference.

```

```

.      eststo model_o7
.
.      timer off 10
.
.      timer list 10
10:    39.36 /      1 =      39.3630
.
.      xtmrho
.
.      estat ic

```

Akaike's information criterion and Bayesian information criterion

| Model | Obs | ll(null) | ll(model) | df | AIC | BIC |
|----------|---------|----------|-----------|----|----------|----------|
| model_o7 | 146,730 | . | -3346.898 | 21 | 6735.795 | 6943.618 |

Note: N=Obs used in calculating BIC; see [R] BIC note.

```

.

```

. * O8: O7 but death-rate instead of life expectancy

. timer on 11

```
. melogit av rechte_kreis_anteil log_dist_1_mit_demos identitaet1b mgh
wahlbeteiligung_kreis_anteil maenner_anteil_kreis einwohner_kreis summer di_dummy mi_dummy do
> _dummy fr_dummy sa_dummy so_dummy cum_anschlag_kreis anzahl_mit_demos sterberate
wansaldo1014 || land: || kreis_id:
```

Fitting fixed-effects model:

```
Iteration 0: log likelihood = -13988.845
Iteration 1: log likelihood = -3553.435
Iteration 2: log likelihood = -3383.6015
Iteration 3: log likelihood = -3354.7908
Iteration 4: log likelihood = -3354.5813
Iteration 5: log likelihood = -3354.5812
```

Refining starting values:

Grid node 0: log likelihood = -3394.9863

Fitting full model:

```
Iteration 0: log likelihood = -3394.9863 (not concave)
Iteration 1: log likelihood = -3361.8855 (not concave)
Iteration 2: log likelihood = -3355.8811 (not concave)
Iteration 3: log likelihood = -3353.0266 (not concave)
Iteration 4: log likelihood = -3350.9528
Iteration 5: log likelihood = -3346.4652
Iteration 6: log likelihood = -3346.3522
Iteration 7: log likelihood = -3346.3508
Iteration 8: log likelihood = -3346.3508
```

Mixed-effects logistic regression Number of obs = 146,730

| | | Observations per Group | | |
|-------|----------|------------------------|---------|---------|
| Group | Variable | No. of Groups | Minimum | Average |
| land | | 16 | 365 | 9,170.6 |
| | kreis_id | 402 | 365 | 365.0 |

Integration method: mvaghermite Integration pts. = 7

Log likelihood = -3346.3508 Wald chi2(18) = 345.32
Prob > chi2 = 0.0000

| | av | Coef. | Std. Err. | z | P> z | [95% Conf. Interval] | |
|------------------------------|------------|-----------|-----------|-------|-------|----------------------|-----------|
| rechte_kreis_anteil | | .1785907 | .0388876 | 4.59 | 0.000 | .1023724 | .2548089 |
| log_dist_1_mit_demos | | -.2290628 | .0486572 | -4.71 | 0.000 | -.324429 | -.1336965 |
| identitaet1b | | .0153251 | .0329613 | 0.46 | 0.642 | -.0492778 | .079928 |
| mgh | | -.0564858 | .0100626 | -5.61 | 0.000 | -.0762082 | -.0367634 |
| wahlbeteiligung_kreis_anteil | | -.0361199 | .0186307 | -1.94 | 0.053 | -.0726354 | .0003955 |
| maenner_anteil_kreis | | -.0774824 | .1119525 | -0.69 | 0.489 | -.2969052 | .1419404 |
| einwohner_kreis | | .3814239 | .0595743 | 6.40 | 0.000 | .2646604 | .4981874 |
| summer | | .0281073 | .0952075 | 0.30 | 0.768 | -.158496 | .2147105 |
| di_dummy | | -.1079564 | .1663688 | -0.65 | 0.516 | -.4340333 | .2181205 |
| mi_dummy | | -.1974899 | .1702556 | -1.16 | 0.246 | -.5311847 | .136205 |
| do_dummy | | -.1211208 | .1663646 | -0.73 | 0.467 | -.4471894 | .2049478 |
| fr_dummy | | .1258541 | .1579046 | 0.80 | 0.425 | -.1836331 | .4353414 |
| sa_dummy | | .4505797 | .1477233 | 3.05 | 0.002 | .1610473 | .740112 |
| so_dummy | | .3251167 | .151077 | 2.15 | 0.031 | .0290113 | .6212221 |
| cum_anschlag_kreis | | .0463755 | .0082362 | 5.63 | 0.000 | .0302328 | .0625183 |
| anzahl_mit_demos_2 | | .0138605 | .0048064 | 2.88 | 0.004 | .0044401 | .0232808 |
| sterberate | | -236.2277 | 58.53203 | -4.04 | 0.000 | -350.9484 | -121.5071 |
| wansaldo1014 | | -.0530467 | .0116042 | -4.57 | 0.000 | -.0757904 | -.0303029 |
| _cons | | 3.098109 | 6.41998 | 0.48 | 0.629 | -9.48482 | 15.68104 |
| land | | | | | | | |
| | var(_cons) | .0361432 | .0351368 | | | .0053768 | .2429555 |
| land>kreis_id | | | | | | | |
| | var(_cons) | .1512199 | .0659843 | | | .0642969 | .3556542 |

LR test vs. logistic model: chi2(2) = 16.46 Prob > chi2 = 0.0003

Note: LR test is conservative and provided only for reference.

```
.      eststo model_o8
.      timer off l1
.      timer list l1
11:    49.53 /      1 =      49.5310
.      xtmrho
.      estat ic
```

Akaike's information criterion and Bayesian information criterion

| Model | Obs | ll (null) | ll (model) | df | AIC | BIC |
|----------|---------|-----------|------------|----|----------|----------|
| model_o8 | 146,730 | . | -3346.351 | 21 | 6734.702 | 6942.525 |

Note: N=Obs used in calculating BIC; see [R] BIC note.

.

Note: LR test is conservative and provided only for reference.

```
.      eststo model_o9
.      timer off 12
.      timer list 12
12:    43.99 /      1 =    43.9890
.      xtmrho
.      estat ic
```

Akaike's information criterion and Bayesian information criterion

| Model | Obs | ll (null) | ll (model) | df | AIC | BIC |
|----------|---------|-----------|------------|----|----------|----------|
| model_o9 | 146,730 | . | -3357.053 | 22 | 6758.106 | 6975.826 |

Note: N=Obs used in calculating BIC; see [R] BIC note.

.

```

. * O10a: Robustness check: Only East Germany, two-level (districts) + Länder fixed
effects
. set more off

. timer on 14

. melogit av rechte_kreis_anteil anzahl_mit_demos cum_anschlag_kreis
log_dist_1_mit_demos identitaet1b alq bildung1 bildung2 mgh wahlbeteiligung_kreis_anteil
maenner
> _anteil_kreis einwohner_kreis summer di_dummy mi_dummy do_dummy fr_dummy sa_dummy so_dummy
laenderdummy* if ostdummy==1 || kreis_id:
note: laenderdummy1 omitted because of collinearity
note: laenderdummy2 omitted because of collinearity
note: laenderdummy3 omitted because of collinearity
note: laenderdummy4 omitted because of collinearity
note: laenderdummy5 omitted because of collinearity
note: laenderdummy6 omitted because of collinearity
note: laenderdummy7 omitted because of collinearity
note: laenderdummy8 omitted because of collinearity
note: laenderdummy9 omitted because of collinearity
note: laenderdummy10 omitted because of collinearity
note: laenderdummy15 omitted because of collinearity
note: laenderdummy16 omitted because of collinearity

Fitting fixed-effects model:

Iteration 0: log likelihood = -3329.803
Iteration 1: log likelihood = -1750.0453
Iteration 2: log likelihood = -1710.1336
Iteration 3: log likelihood = -1685.7439
Iteration 4: log likelihood = -1685.5802
Iteration 5: log likelihood = -1685.5801

Refining starting values:

Grid node 0: log likelihood = -1706.4313

Fitting full model:

Iteration 0: log likelihood = -1706.4313 (not concave)
Iteration 1: log likelihood = -1685.9347
Iteration 2: log likelihood = -1685.2969
Iteration 3: log likelihood = -1685.2765
Iteration 4: log likelihood = -1685.2765

Mixed-effects logistic regression
Group variable: kreis_id

Number of obs = 28,105
Number of groups = 77

Obs per group:
    min = 365
    avg = 365.0
    max = 365

Integration method: mvaghermite
Integration pts. = 7

Wald chi2(23) = 337.67
Prob > chi2 = 0.0000
Log likelihood = -1685.2765

```

| | av | Coef. | Std. Err. | z | P> z | [95% Conf. Interval] |
|------------------------------|----|-----------|-----------|-------|-------|----------------------|
| rechte_kreis_anteil | | .230406 | .0642253 | 3.59 | 0.000 | .1045268 .3562852 |
| anzahl_mit_demos_2 | | .0148197 | .006333 | 2.34 | 0.019 | .0024071 .0272322 |
| cum_anschlag_kreis | | .0320219 | .0086921 | 3.68 | 0.000 | .0149857 .0490581 |
| log_dist_1_mit_demos | | -.2605281 | .0656504 | -3.97 | 0.000 | -.3892005 -.1318557 |
| identitaet1b | | .1135021 | .0554569 | 2.05 | 0.041 | .0048086 .2221957 |
| alq | | -.0055779 | .0576515 | -0.10 | 0.923 | -.1185728 .107417 |
| bildung1 | | .0316478 | .0205964 | 1.54 | 0.124 | -.0087204 .072016 |
| bildung2 | | -.0633754 | .0498173 | -1.27 | 0.203 | -.1610156 .0342649 |
| mgh | | .0466153 | .0812812 | 0.57 | 0.566 | -.1126929 .2059234 |
| wahlbeteiligung_kreis_anteil | | -.0692792 | .0485229 | -1.43 | 0.153 | -.1643824 .0258239 |
| maenner_anteil_kreis | | .5000704 | .1882101 | 2.66 | 0.008 | .1311855 .8689554 |
| einwohner_kreis | | .1722291 | .1132708 | 1.52 | 0.128 | -.0497776 .3942357 |
| summer | | .1312176 | .1213462 | 1.08 | 0.280 | -.1066165 .3690517 |
| di_dummy | | -.0958453 | .2234795 | -0.43 | 0.668 | -.533857 .3421664 |
| mi_dummy | | -.0878548 | .2234917 | -0.39 | 0.694 | -.5258904 .3501808 |
| do_dummy | | .045436 | .2160324 | 0.21 | 0.833 | -.3779797 .4688516 |
| fr_dummy | | .2777057 | .206817 | 1.34 | 0.179 | -.1276481 .6830595 |
| sa_dummy | | .5774919 | .1955368 | 2.95 | 0.003 | .1942468 .960737 |

```

so_dummy | .3943593 .2013217 1.96 0.050 -.000224 .7889426
laenderdummy1 | 0 (omitted)
laenderdummy2 | 0 (omitted)
laenderdummy3 | 0 (omitted)
laenderdummy4 | 0 (omitted)
laenderdummy5 | 0 (omitted)
laenderdummy6 | 0 (omitted)
laenderdummy7 | 0 (omitted)
laenderdummy8 | 0 (omitted)
laenderdummy9 | 0 (omitted)
laenderdummy10 | 0 (omitted)
laenderdummy11 | -4.389549 3.266311 -1.34 0.179 -10.7914 2.012303
laenderdummy12 | -.2961441 .3081779 -0.96 0.337 -.9001617 .3078735
laenderdummy13 | .6666517 .2929891 2.28 0.023 .0924035 1.2409
laenderdummy14 | 1.071464 .3464883 3.09 0.002 .3923598 1.750569
laenderdummy15 | 0 (omitted)
laenderdummy16 | 0 (omitted)
_cons | -24.46196 9.591454 -2.55 0.011 -43.26086 -5.663053
-----+-----
kreis_id |
var(_cons) | .0429614 .0600011 .0027814 .6635757
-----+-----

```

LR test vs. logistic model: chibar2(01) = 0.61 Prob >= chibar2 = 0.2179

```

. eststo model_o10a
. timer off 14
. timer list 14
14: 1.90 / 1 = 1.9040
. estat ic

```

Akaike's information criterion and Bayesian information criterion

| Model | Obs | ll(null) | ll(model) | df | AIC | BIC |
|------------|--------|----------|-----------|----|----------|----------|
| model_o10a | 28,105 | . | -1685.276 | 25 | 3420.553 | 3626.645 |

Note: N=Obs used in calculating BIC; see [R] BIC note.

```

. coefplot model_o10a, xline (1) eform graphregion(color(white)) bgcolor(white)
msymbol(d) mcolor(white) levels(99 95) ciopts(lwidth(2 ..) lcolor(*.33 *.66) recast(rspik
> e ..)) legend(order(1 "CI 99 %" 2 "CI 95 %") row(1)) drop(_cons) scheme(s1color) xsize(7)
ysize(4)

```

```

. graph save model_o10a, replace
(note: file model_o10a.gph not found)
(file model_o10a.gph saved)

. graph export model_o10a.eps, replace
(note: file model_o10a.eps not found)
(file model_o10a.eps written in EPS format)
.

```

```

. * O10b: Robustness check:          Only West Germany, two-level (districts) + Länder fixed
effects
.      set more off

.      timer on 14

.      melogit av      rechte_kreis_anteil  anzahl_mit_demos  cum_anschlag_kreis
log_dist_1_mit_demos  identitaet1b  alq  bildung1  bildung2  mgh      wahlbeteiligung_kreis_anteil
maenner
> _anteil_kreis einwohner_kreis summer  di_dummy mi_dummy do_dummy fr_dummy sa_dummy so_dummy
laenderdummy* if ostdummy==0 || kreis_id:
note: laenderdummy9 omitted because of collinearity
note: laenderdummy10 omitted because of collinearity
note: laenderdummy11 omitted because of collinearity
note: laenderdummy12 omitted because of collinearity
note: laenderdummy13 omitted because of collinearity
note: laenderdummy14 omitted because of collinearity
note: laenderdummy15 omitted because of collinearity
note: laenderdummy16 omitted because of collinearity

Fitting fixed-effects model:

Iteration 0:   log likelihood = -10654.651
Iteration 1:   log likelihood = -1743.692
Iteration 2:   log likelihood = -1621.319
Iteration 3:   log likelihood = -1559.7705
Iteration 4:   log likelihood = -1558.904
Iteration 5:   log likelihood = -1558.9011
Iteration 6:   log likelihood = -1558.9011

Refining starting values:

Grid node 0:   log likelihood = -1606.1097

Fitting full model:

Iteration 0:   log likelihood = -1606.1097   (not concave)
Iteration 1:   log likelihood = -1565.6672   (not concave)
Iteration 2:   log likelihood = -1561.8646
Iteration 3:   log likelihood = -1560.3792   (not concave)
Iteration 4:   log likelihood = -1560.0851   (not concave)
Iteration 5:   log likelihood = -1559.968   (not concave)
Iteration 6:   log likelihood = -1559.9212   (not concave)
Iteration 7:   log likelihood = -1559.9025   (not concave)
Iteration 8:   log likelihood = -1559.9007   (not concave)
Iteration 9:   log likelihood = -1559.8999   (not concave)
Iteration 10:  log likelihood = -1559.8996   (not concave)
Iteration 11:  log likelihood = -1559.8996   (not concave)
Iteration 12:  log likelihood = -1559.8996   (not concave)
Iteration 13:  log likelihood = -1559.8995   (not concave)
Iteration 14:  log likelihood = -1559.8995   (not concave)
Iteration 15:  log likelihood = -1559.8995   (not concave)
Iteration 16:  log likelihood = -1559.8995   (backed up)
Iteration 17:  log likelihood = -1559.8995   (not concave)
Iteration 18:  log likelihood = -1559.8995   (backed up)
Iteration 19:  log likelihood = -1559.8995   (backed up)
Iteration 20:  log likelihood = -1559.8995   (backed up)
Iteration 21:  log likelihood = -1559.8995   (backed up)
Iteration 22:  log likelihood = -1559.8995   (backed up)
Iteration 23:  log likelihood = -1559.8995   (backed up)
Iteration 24:  log likelihood = -1559.8995   (backed up)
Iteration 25:  log likelihood = -1559.8995   (backed up)
Iteration 26:  log likelihood = -1559.8995   (not concave)
Iteration 27:  log likelihood = -1559.8995   (backed up)
Iteration 28:  log likelihood = -1559.8995   (backed up)
Iteration 29:  log likelihood = -1559.8995   (not concave)
Iteration 30:  log likelihood = -1559.8995   (backed up)
Iteration 31:  log likelihood = -1559.8995   (backed up)
Iteration 32:  log likelihood = -1559.8995   (not concave)
Iteration 33:  log likelihood = -1559.8995   (not concave)
Iteration 34:  log likelihood = -1559.8995
Iteration 35:  log likelihood = -1559.8995   (not concave)
Iteration 36:  log likelihood = -1559.8995
Iteration 37:  log likelihood = -1559.8994   (not concave)
Iteration 38:  log likelihood = -1559.8994
Iteration 39:  log likelihood = -1559.8984   (backed up)
Iteration 40:  log likelihood = -1559.8983   (not concave)
Iteration 41:  log likelihood = -1559.8982

```

```

Iteration 42: log likelihood = -1559.8907 (not concave)
Iteration 43: log likelihood = -1559.8899
Iteration 44: log likelihood = -1559.8751 (not concave)
Iteration 45: log likelihood = -1559.8736
Iteration 46: log likelihood = -1559.8589 (not concave)
Iteration 47: log likelihood = -1559.8531 (not concave)
Iteration 48: log likelihood = -1559.8345 (not concave)
Iteration 49: log likelihood = -1559.805
Iteration 50: log likelihood = -1558.9033
Iteration 51: log likelihood = -1558.9016
Iteration 52: log likelihood = -1558.9011
Iteration 53: log likelihood = -1558.9011

```

```

Mixed-effects logistic regression      Number of obs    =    118,625
Group variable:      kreis_id          Number of groups  =     325

```

```

Obs per group:
      min =    365
      avg =   365.0
      max =    365

```

```

Integration method: mvaghermite      Integration pts.  =         7

```

```

Wald chi2(27)      =    478.60
Prob > chi2        =    0.0000
Log likelihood = -1558.9011

```

| | av | Coef. | Std. Err. | z | P> z | [95% Conf. Interval] | |
|------------------------------|----|-----------|-----------|-------|-------|----------------------|-----------|
| rechte_kreis_anteil | | .0892169 | .080679 | 1.11 | 0.269 | -.0689111 | .2473449 |
| anzahl_mit_demos_2 | | .0092076 | .0075391 | 1.22 | 0.222 | -.0055687 | .023984 |
| cum_anschlag_kreis | | .6175397 | .0432523 | 14.28 | 0.000 | .5327668 | .7023126 |
| log_dist_1_mit_demos | | -.0881478 | .0734248 | -1.20 | 0.230 | -.2320577 | .055762 |
| identitaetlb | | .0584957 | .1877407 | 0.31 | 0.755 | -.3094693 | .4264608 |
| alq | | .0067252 | .0584477 | 0.12 | 0.908 | -.1078302 | .1212806 |
| bildung1 | | -.002868 | .0120522 | -0.24 | 0.812 | -.0264899 | .0207539 |
| bildung2 | | -.009508 | .0636631 | -0.15 | 0.881 | -.1342853 | .1152693 |
| mgh | | -.0212274 | .0162799 | -1.30 | 0.192 | -.0531355 | .0106807 |
| wahlbeteiligung_kreis_anteil | | .0318819 | .0302476 | 1.05 | 0.292 | -.0274023 | .0911662 |
| maenner_anteil_kreis | | .2313554 | .1476861 | 1.57 | 0.117 | -.0581041 | .5208148 |
| einwohner_kreis | | .0129611 | .049238 | 0.26 | 0.792 | -.0835436 | .1094658 |
| summer | | -.1264059 | .1558311 | -0.81 | 0.417 | -.4318291 | .1790174 |
| di_dummy | | -.125369 | .2487392 | -0.50 | 0.614 | -.6128889 | .362151 |
| mi_dummy | | -.3490107 | .263908 | -1.32 | 0.186 | -.8662609 | .1682395 |
| do_dummy | | -.3617086 | .2638957 | -1.37 | 0.170 | -.8789347 | .1555176 |
| fr_dummy | | -.0844368 | .2467152 | -0.34 | 0.732 | -.5679897 | .3991162 |
| sa_dummy | | .2831347 | .2265129 | 1.25 | 0.211 | -.1608225 | .7270918 |
| so_dummy | | .2352322 | .2286947 | 1.03 | 0.304 | -.2130012 | .6834655 |
| laenderdummy1 | | .073744 | .9245224 | 0.08 | 0.936 | -1.738287 | 1.885775 |
| laenderdummy2 | | .8385526 | .9233314 | 0.91 | 0.364 | -.9711437 | 2.648249 |
| laenderdummy3 | | -.5015528 | .4079345 | -1.23 | 0.219 | -1.30109 | .2979841 |
| laenderdummy4 | | 1.185053 | .9750503 | 1.22 | 0.224 | -.7260102 | 3.096117 |
| laenderdummy5 | | .6141616 | .358974 | 1.71 | 0.087 | -.0894145 | 1.317738 |
| laenderdummy6 | | -.4458414 | .5474682 | -0.81 | 0.415 | -1.518859 | .6271765 |
| laenderdummy7 | | -.0360777 | .3241088 | -0.11 | 0.911 | -.6713193 | .5991639 |
| laenderdummy8 | | .0777225 | .8508351 | 0.09 | 0.927 | -1.589884 | 1.745329 |
| laenderdummy9 | | 0 | (omitted) | | | | |
| laenderdummy10 | | 0 | (omitted) | | | | |
| laenderdummy11 | | 0 | (omitted) | | | | |
| laenderdummy12 | | 0 | (omitted) | | | | |
| laenderdummy13 | | 0 | (omitted) | | | | |
| laenderdummy14 | | 0 | (omitted) | | | | |
| laenderdummy15 | | 0 | (omitted) | | | | |
| laenderdummy16 | | 0 | (omitted) | | | | |
| _cons | | -18.7975 | 9.536009 | -1.97 | 0.049 | -37.48773 | -.1072627 |
| ----- | | | | | | | |
| kreis_id | | | | | | | |
| var(_cons) | | 2.86e-32 | 3.16e-17 | | | . | . |
| ----- | | | | | | | |

```

LR test vs. logistic model: chi2(0) = 0.00      Prob > chi2 = .

```

Note: LR test is conservative and provided only for reference.

```

.      eststo model_o10a
.
.      timer off 14
.
.      timer list 14
14:      40.44 /      2 =      20.2225

```

```
.          estat ic
```

Akaike's information criterion and Bayesian information criterion

| Model | Obs | ll (null) | ll (model) | df | AIC | BIC |
|------------|---------|-----------|------------|----|----------|----------|
| model_o10a | 118,625 | . | -1558.901 | 28 | 3173.802 | 3444.946 |

Note: N=Obs used in calculating BIC; see [R] BIC note.

*** O11: Robustness check: main model 20 integration points xtmelogit.**

```
. timer on 13

. xtmelogit av rechte_kreis_anteil log_dist_1_mit_demos identitaet1b alq bildung1
bildung2 mgh wa
> hlbeteiligung_kreis_anteil maenner_anteil_kreis einwohner_kreis summer di_dummy mi_dummy
do_dummy fr_dummy
> sa_dummy so_dummy cum_anschlag_kreis anzahl_mit_demos || land: || kreis_id:, variance
intpoints(20)
```

Refining starting values:

```
Iteration 0: log likelihood = -3398.6541 (not concave)
Iteration 1: log likelihood = -3395.132 (not concave)
Iteration 2: log likelihood = -3385.4232
```

Performing gradient-based optimization:

```
Iteration 0: log likelihood = -3385.4232 (not concave)
Iteration 1: log likelihood = -3367.8871 (not concave)
Iteration 2: log likelihood = -3365.9222 (not concave)
Iteration 3: log likelihood = -3361.5989 (not concave)
Iteration 4: log likelihood = -3360.542
Iteration 5: log likelihood = -3358.7183
Iteration 6: log likelihood = -3358.6553
Iteration 7: log likelihood = -3358.6551
```

Mixed-effects logistic regression Number of obs = 146,730

| Group Variable | No. of Groups | Observations per Group Minimum | Average | Maximum | Integration Points |
|----------------|---------------|-----------------------------------|---------|---------|--------------------|
| land | 16 | 365 | 9,170.6 | 35,040 | 20 |
| kreis_id | 402 | 365 | 365.0 | 365 | 20 |

Log likelihood = -3358.6551 Wald chi2(19) = 261.24
Prob > chi2 = 0.0000

| | av | Coef. | Std. Err. | z | P> z | [95% Conf. Interval] |
|------------------------------|----|-----------|-----------|-------|-------|----------------------|
| rechte_kreis_anteil | | .1815876 | .0451927 | 4.02 | 0.000 | .0930115 .2701638 |
| log_dist_1_mit_demos | | -.1975829 | .0483691 | -4.08 | 0.000 | -.2923846 -.1027812 |
| identitaet1b | | .0057512 | .0462322 | 0.12 | 0.901 | -.0848622 .0963647 |
| alq | | -.0024767 | .040493 | -0.06 | 0.951 | -.0818415 .0768881 |
| bildung1 | | .0162178 | .0092359 | 1.76 | 0.079 | -.0018843 .0343199 |
| bildung2 | | .0208928 | .0387083 | 0.54 | 0.589 | -.0549741 .0967598 |
| mgh | | -.0459668 | .0109835 | -4.19 | 0.000 | -.067494 -.0244395 |
| wahlbeteiligung_kreis_anteil | | .0064853 | .0234581 | 0.28 | 0.782 | -.0394917 .0524622 |
| maenner_anteil_kreis | | .2368648 | .1169922 | 2.02 | 0.043 | .0075642 .4661654 |
| einwohner_kreis | | .1332587 | .0207367 | 6.43 | 0.000 | .0926155 .1739019 |
| summer | | .0240068 | .0952143 | 0.25 | 0.801 | -.1626099 .2106234 |
| di_dummy | | -.1082313 | .166365 | -0.65 | 0.515 | -.4343006 .2178381 |
| mi_dummy | | -.197684 | .1702522 | -1.16 | 0.246 | -.5313721 .1360041 |
| do_dummy | | -.1211876 | .1663599 | -0.73 | 0.466 | -.447247 .2048718 |
| fr_dummy | | .1247418 | .1579068 | 0.79 | 0.430 | -.1847498 .4342335 |
| sa_dummy | | .4503664 | .1477221 | 3.05 | 0.002 | .1608365 .7398963 |
| so_dummy | | .3248034 | .1510752 | 2.15 | 0.032 | .0287015 .6209053 |
| cum_anschlag_kreis | | .0402682 | .0077507 | 5.20 | 0.000 | .0250771 .0554594 |
| anzahl_mit_demos_2 | | .0150645 | .0048033 | 3.14 | 0.002 | .0056501 .0244789 |
| _cons | | -18.87826 | 6.438143 | -2.93 | 0.003 | -31.49679 -6.259732 |

| Random-effects Parameters | Estimate | Std. Err. | [95% Conf. Interval] |
|---------------------------|----------|-----------|----------------------|
| land: Identity | | | |
| var(_cons) | .1003708 | .0703721 | .0253987 .3966462 |
| kreis_id: Identity | | | |
| var(_cons) | .218475 | .0760481 | .1104359 .4322082 |

LR test vs. logistic model: chi2(2) = 48.73 Prob > chi2 = 0.0000

Note: LR test is conservative and provided only for reference.

```

.          eststo model_o9
.          timer off 13
.          timer list 13
13: 13815.98 /          1 = 13815.9810
.          xtmrho

Levels: land kreis_id

level 1:
Intraclass correlation (ICC): rho1 = 0.02781
Median Odds Ratio (MOR):      mor1 = 1.35283

level 2:
Intraclass correlation (ICC): rho2 = 0.06054
Median Odds Ratio (MOR):      mor2 = 1.56182

.          estat ic

Akaike's information criterion and Bayesian information criterion
-----
Model |      Obs  ll(null)  ll(model)      df      AIC      BIC
-----+-----
. |    146,730      . -3358.655      22    6761.31    6979.03
-----
Note: N=Obs used in calculating BIC; see [R] BIC note.

```


*** O12: Robustness check: main model 7 integration points, numerical integration with gllamm**

```
. timer on 14

. gllamm av rechte_kreis_anteil log_dist_1_mit_demos identitaet1b alq bildung1
bildung2 mgh wahlb
> eteiligung_kreis_anteil maenner_anteil_kreis einwohner_kreis summer di_dummy mi_dummy
do_dummy fr_dummy sa
> _dummy so_dummy cum_anschlag_kreis anzahl_mit_demos, family(binomial) link(logit)
i(kreisnummer state) nip
> (7)

Iteration 0: log likelihood = -3374.1753 (not concave)
Iteration 1: log likelihood = -3369.9952 (not concave)
Iteration 2: log likelihood = -3359.7404 (not concave)
Iteration 3: log likelihood = -3359.4591 (not concave)
Iteration 4: log likelihood = -3358.1614 (not concave)
Iteration 5: log likelihood = -3357.9296
Iteration 6: log likelihood = -3357.6089
Iteration 7: log likelihood = -3357.5574
Iteration 8: log likelihood = -3357.5573

number of level 1 units = 146730
number of level 2 units = 402
number of level 3 units = 16

Condition Number = 10443.194

gllamm model

log likelihood = -3357.5573

-----+-----
               av |      Coef.   Std. Err.      z    P>|z|      [95% Conf. Interval]
-----+-----
    rechte_kreis_anteil |   .1767144   .0356036    4.96   0.000    .1069326    .2464962
  log_dist_1_mit_demos |  -.1923118   .0475738   -4.04   0.000   -.2855547   -.0990689
    identitaet1b |  -.0157358   .0339416   -0.46   0.643   -.0822602    .0507886
        alq |   .0001393   .0338774    0.00   0.997   -.0662592    .0665379
    bildung1 |   .0165018   .0081503    2.02   0.043    .0005275    .0324761
    bildung2 |   .015856   .0360339    0.44   0.660   -.0547692    .0864812
        mgh |  -.0516606   .0105421   -4.90   0.000   -.0723227   -.0309985
wahlbeteiligung_kreis_anteil |  -.00016   .0223132   -0.01   0.994   -.043893    .043573
  maenner_anteil_kreis |   .2300724   .1060496    2.17   0.030    .022219    .4379258
    einwohner_kreis |   .1488301   .016165    9.21   0.000    .1171473    .1805128
        summer |   .0236155   .0951972    0.25   0.804   -.1629676    .2101986
        di_dummy |  -.1081762   .1663316   -0.65   0.515   -.4341802    .2178279
        mi_dummy |  -.1976095   .1702179   -1.16   0.246   -.5312304    .1360114
        do_dummy |  -.121087   .1663264   -0.73   0.467   -.4470809    .2049068
        fr_dummy |   .124546   .1578777    0.79   0.430   -.1848886    .4339806
        sa_dummy |   .4502212   .1476955    3.05   0.002    .1607434    .7396989
        so_dummy |   .3246377   .1510472    2.15   0.032    .0285906    .6206848
    cum_anschlag_kreis |   .0383955   .0070356    5.46   0.000    .024606    .0521849
  anzahl_mit_demos_2 |   .0153495   .004777    3.21   0.001    .0059867    .0247123
        _cons |  -18.69185   5.803763   -3.22   0.001   -30.06702   -7.316683
-----+-----

Variances and covariances of random effects
-----

***level 2 (kreisnummer)

    var(1): .21112336 (.06969336)

***level 3 (state)

    var(1): .23416857 (.1025266)
-----

. eststo model_o10

. timer off 14

. timer list 14
14: 7225.24 / 2 = 3612.6215
```

```
.          estat ic
```

Akaike's information criterion and Bayesian information criterion

| Model | Obs | ll(null) | ll(model) | df | AIC | BIC |
|-----------|---------|----------|-----------|----|----------|----------|
| model_o10 | 146,730 | . | -3357.557 | 22 | 6759.115 | 6976.834 |

Note: N=Obs used in calculating BIC; see [R] BIC note.

```
.          coefplot model_o10, xline (1) eform graphregion(color(white)) bgcolor(white)
msymbol(d) mcolor(whit
> e) levels(99 95) ciopts(lwidth(2 ..) lcolor(*.33 *.66) recast(rspike ..) legend(order(1
"CI 99 %" 2 "CI 9
> 5 %") row(1)) drop(_cons) scheme(s1color) xsize(7) ysize(4)
```

```
.          graph save model_o10, replace
(file model_o10.gph saved)
```

```
.          graph export model_o10.eps, replace
(file model_o10.eps written in EPS format)
```

```

. * O13: Robustness check: main model 7 integration points, adaptive quadrature with gllamm
.      set more off

.      timer on 15

.      gllamm av  rechte_kreis_anteil log_dist_1_mit_demos identitaet1b  alq bildung1
bildung2 mgh  wahlb
> eteiligung_kreis_anteil maenner_anteil_kreis einwohner_kreis summer  di_dummy mi_dummy
do_dummy fr_dummy sa
> _dummy so_dummy cum_anschlag_kreis  anzahl_mit_demos,  family(binomial)  link(logit)
i(kreisnummer state ) nip
> (7) adapt

Running adaptive quadrature
Iteration 0:  log likelihood = -3372.1621
Iteration 1:  log likelihood = -3363.997
Iteration 2:  log likelihood = -3362.0423
Iteration 3:  log likelihood = -3360.5625
Iteration 4:  log likelihood = -3359.3858
Iteration 5:  log likelihood = -3359.1375
Iteration 6:  log likelihood = -3359.0052
Iteration 7:  log likelihood = -3358.9623
Iteration 8:  log likelihood = -3358.8828
Iteration 9:  log likelihood = -3358.8822

Adaptive quadrature has converged, running Newton-Raphson
Iteration 0:  log likelihood = -3358.8822 (not concave)
Iteration 1:  log likelihood = -3358.8745
Iteration 2:  log likelihood = -3358.6836
Iteration 3:  log likelihood = -3358.6553
Iteration 4:  log likelihood = -3358.6553

number of level 1 units = 146730
number of level 2 units = 402
number of level 3 units = 16

Condition Number = 6082.2221

gllamm model

log likelihood = -3358.6553

-----
      av |      Coef.  Std. Err.      z    P>|z|      [95% Conf. Interval]
-----+-----
      rechte_kreis_anteil |   .1815867   .0451897    4.02   0.000    .0930166   .2701569
      log_dist_1_mit_demos |  -.1975817   .0483695   -4.08   0.000   -.2923841  -.1027792
      identitaet1b |   .0057377   .0462155    0.12   0.901   -.084843   .0963185
      alq |  -.0024809   .0404935   -0.06   0.951   -.0818466   .0768848
      bildung1 |   .016217   .0092358    1.76   0.079   -.0018848   .0343188
      bildung2 |   .020889   .0387047    0.54   0.589   -.0549709   .0967489
      mgh |  -.0459672   .0109837   -4.19   0.000   -.0674947  -.0244396
      wahlbeteiligung_kreis_anteil |   .0064835   .0234588    0.28   0.782   -.0394949   .0524619
      maenner_anteil_kreis |   .2368571   .1170541    2.02   0.043   .0074352   .466279
      einwohner_kreis |   .1332648   .0207365    6.43   0.000   .0926219   .1739077
      summer |   .0240068   .0952143    0.25   0.801   -.1626098   .2106235
      di_dummy |  -.1082304   .1663649   -0.65   0.515   -.4342997   .2178389
      mi_dummy |  -.1976836   .1702522   -1.16   0.246   -.5313717   .1360046
      do_dummy |  -.1211868   .1663599   -0.73   0.466   -.4472461   .2048726
      fr_dummy |   .1247425   .1579068    0.79   0.430   -.1847491   .4342341
      sa_dummy |   .4503669   .1477221    3.05   0.002   .160837   .7398968
      so_dummy |   .3248039   .1510752    2.15   0.032   .028702   .6209058
      cum_anschlag_kreis |   .0402677   .0077512    5.20   0.000   .0250757   .0554597
      anzahl_mit_demos_2 |   .0150646   .0048034    3.14   0.002   .0056502   .024479
      _cons |  -18.87802   6.441571   -2.93   0.003  -31.50327  -6.252772
-----

Variances and covariances of random effects
-----

***level 2 (kreisnummer)

      var(1): .21848645 (.07609474)

***level 3 (state)

```

```

var(1): .10041454 (.07027888)
-----

.      eststo model_o11
.      timer off 15
.      timer list 15
15: 21101.84 /      1 = 21101.8370
.      estat ic

Akaike's information criterion and Bayesian information criterion
-----
      Model |      Obs  ll(null)  ll(model)      df      AIC      BIC
-----+-----
model_o11 |    146,730      . -3358.655      22    6761.311    6979.03
-----
      Note: N=Obs used in calculating BIC; see [R] BIC note.

```

*** O14: Robustness check: main model with QR decomposition of the variance-components matrix**

```
. meqrlogit av log_dist_1_mit_demos anzahl_mit_demos cum_anschlag_kreis di_dummy
mi_dummy do_dummy fr
> _dummy sa_dummy so_dummy summer rechte_kreis_anteil alq bildung1 bildung2 mgh
wahlbeteiligung_kreis_anteil
> il maenner_anteil_kreis einwohner_kreis identitaet1b || land: || kreis_id:
```

Refining starting values:

```
Iteration 0: log likelihood = -3398.6457 (not concave)
Iteration 1: log likelihood = -3393.6538 (not concave)
Iteration 2: log likelihood = -3381.1851
```

Performing gradient-based optimization:

```
Iteration 0: log likelihood = -3381.1851 (not concave)
Iteration 1: log likelihood = -3377.9362 (not concave)
Iteration 2: log likelihood = -3370.315 (not concave)
Iteration 3: log likelihood = -3362.6278 (not concave)
Iteration 4: log likelihood = -3360.777
Iteration 5: log likelihood = -3358.6938
Iteration 6: log likelihood = -3358.6553
Iteration 7: log likelihood = -3358.6551
```

Mixed-effects logistic regression Number of obs = 146,730

| Group Variable | No. of Groups | Observations per Group Minimum | Average | Maximum | Integration Points |
|----------------|---------------|-----------------------------------|---------|---------|--------------------|
| land | 16 | 365 | 9,170.6 | 35,040 | 7 |
| kreis_id | 402 | 365 | 365.0 | 365 | 7 |

Log likelihood = -3358.6551 Wald chi2(19) = 261.24
Prob > chi2 = 0.0000

| | av | Coef. | Std. Err. | z | P> z | [95% Conf. Interval] |
|------------------------------|----|-----------|-----------|-------|-------|----------------------|
| log_dist_1_mit_demos | | -.197583 | .0483691 | -4.08 | 0.000 | -.2923846 -.1027814 |
| anzahl_mit_demos_2 | | .0150645 | .0048033 | 3.14 | 0.002 | .0056501 .0244789 |
| cum_anschlag_kreis | | .0402682 | .0077507 | 5.20 | 0.000 | .0250771 .0554594 |
| di_dummy | | -.1082311 | .166365 | -0.65 | 0.515 | -.4343004 .2178382 |
| mi_dummy | | -.1976843 | .1702522 | -1.16 | 0.246 | -.5313725 .1360039 |
| do_dummy | | -.1211875 | .1663599 | -0.73 | 0.466 | -.4472468 .2048719 |
| fr_dummy | | .1247418 | .1579068 | 0.79 | 0.430 | -.1847498 .4342335 |
| sa_dummy | | .4503664 | .147722 | 3.05 | 0.002 | .1608365 .7398963 |
| so_dummy | | .3248034 | .1510752 | 2.15 | 0.032 | .0287015 .6209052 |
| summer | | .0240068 | .0952143 | 0.25 | 0.801 | -.1626099 .2106234 |
| rechte_kreis_anteil | | .1815881 | .0451909 | 4.02 | 0.000 | .0930155 .2701606 |
| alq | | -.0024766 | .040492 | -0.06 | 0.951 | -.0818395 .0768862 |
| bildung1 | | .0162178 | .0092357 | 1.76 | 0.079 | -.0018838 .0343194 |
| bildung2 | | .0208928 | .0387072 | 0.54 | 0.589 | -.0549719 .0967575 |
| mgh | | -.0459668 | .0109834 | -4.19 | 0.000 | -.0674938 -.0244397 |
| wahlbeteiligung_kreis_anteil | | .0064853 | .0234576 | 0.28 | 0.782 | -.0394907 .0524613 |
| maenner_anteil_kreis | | .2368646 | .1169886 | 2.02 | 0.043 | .007571 .4661581 |
| einwohner_kreis | | .1332589 | .020736 | 6.43 | 0.000 | .092617 .1739008 |
| identitaet1b | | .005751 | .0462231 | 0.12 | 0.901 | -.0848446 .0963467 |
| _cons | | -18.87826 | 6.437968 | -2.93 | 0.003 | -31.49645 -6.260075 |

| Random-effects Parameters | Estimate | Std. Err. | [95% Conf. Interval] |
|---------------------------|----------|-----------|----------------------|
| land: Identity | | | |
| var(_cons) | .1003723 | .0703576 | .0254068 .396531 |
| kreis_id: Identity | | | |
| var(_cons) | .218475 | .0760472 | .1104368 .4322047 |

LR test vs. logistic model: chi2(2) = 48.73 Prob > chi2 = 0.0000

Note: LR test is conservative and provided only for reference.

```
. eststo model_4c
. timer off 21
```

```

.      timer list 21
21:   3389.20 /      1 =   3389.1970

.      xtmrho

.      estat ic

```

Akaike's information criterion and Bayesian information criterion

| Model | Obs | ll (null) | ll (model) | df | AIC | BIC |
|----------|---------|-----------|------------|----|---------|---------|
| model_4c | 146,730 | . | -3358.655 | 22 | 6761.31 | 6979.03 |

Note: N=Obs used in calculating BIC; see [R] BIC note.